MOTOR BOATING SAILING

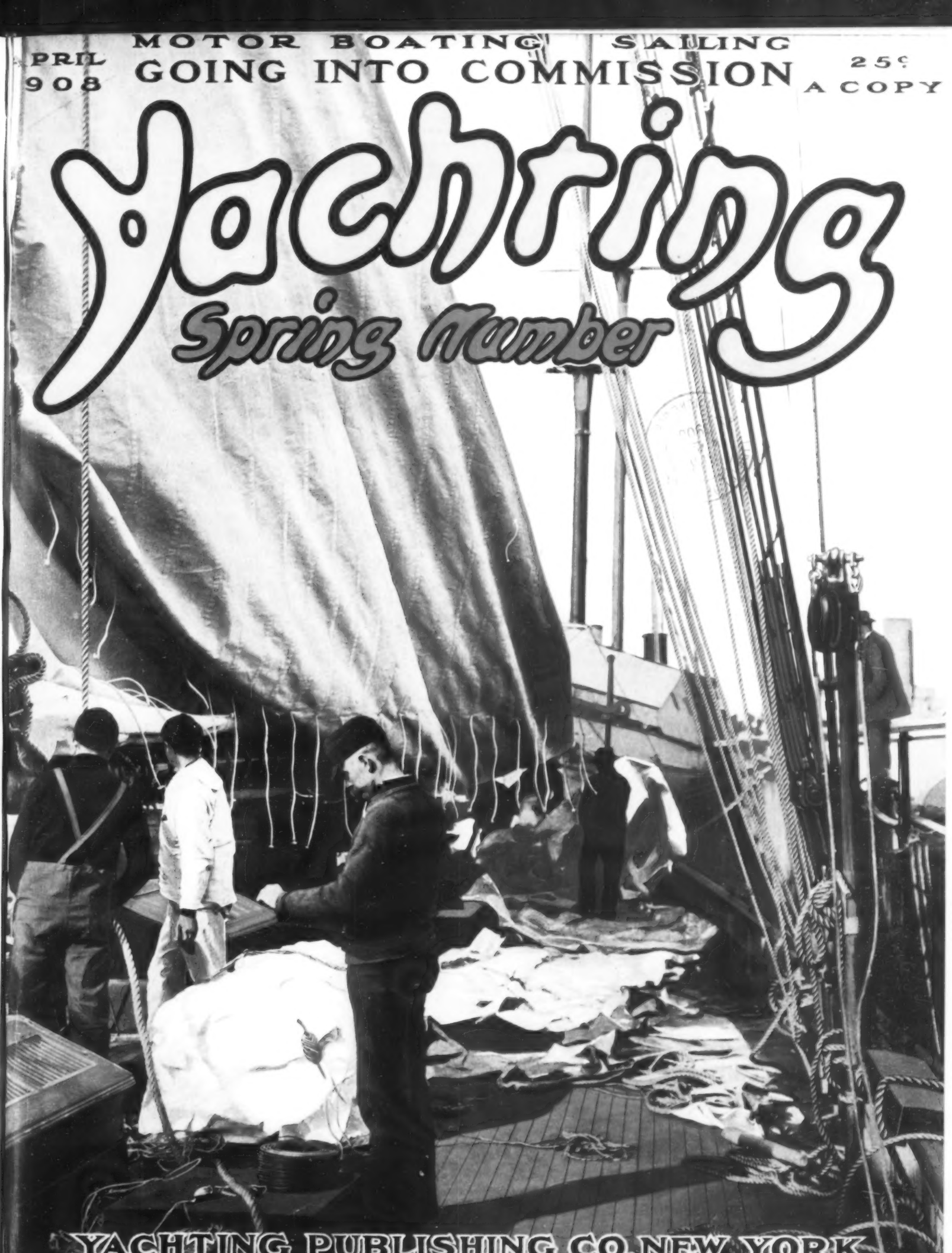
APRIL 1908

GOING INTO COMMISSION

25¢ A COPY

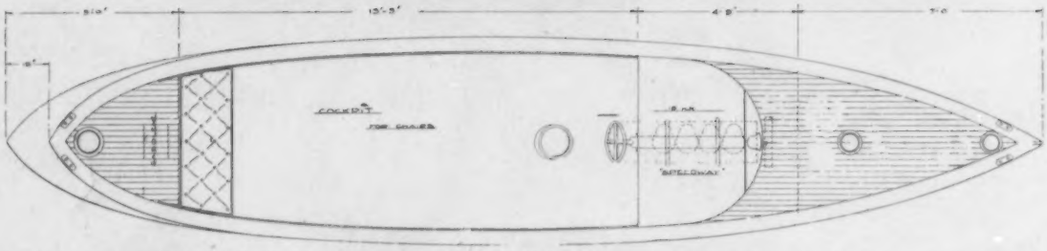
Yachting

Spring Number



YACHTING PUBLISHING CO. NEW YORK

SPEEDWAY RUNABOUT



Length 30 feet. Beam 6 feet. Draught 2 feet. Speed 12 miles. Engine, Four-cylinder, Four-cycle, 16 Horse-power "Speedway."

CONSTRUCTION: Cedar planking on oak frames, copper riveted, decks and interior trim selected mahogany.

OPERATION:

Starting crank and reversing lever, switches and oiling system are located on bulkhead. Controls to engine are on the steering wheel, same as in modern automobile practice, which brings the entire operation of the launch at one point and by one person.

EQUIPMENT: Thwart seat aft with ice-box under, top and back of seat being upholstered in leather. Four wicker chairs with leather-covered cushions. Linoleum for floor. Brass chocks and cleats. Flag-poles and brass sockets. Two flags. Name in brass letters on each side of bow.

IN STOCK .·. READY FOR DELIVERY

We Design and Build Boats of Every Size and Style for Pleasure or Commercial Service

"Speedway" Gasolene Marine Engines in Stock—All Sizes

Gas Engine & Power Co. *and* Charles L. Seabury & Co.

CONSOLIDATED

MORRIS HEIGHTS NEW YORK CITY

MEMBER NATIONAL ASSOCIATION BOAT AND ENGINE MANUFACTURERS

YACHTS FOR SALE AND CHARTER

For rates address,

ADVERTISING DEPARTMENT
YACHTING PUBLISHING CO.
206 Broadway, New York.

26—Beautifully built power launch, 36 x 30.6 x 7.3 x 2.8. Built 1903, but used only a few months, and in perfect condition. 10 H. P. Meitz & Weiss engine. Speed 8 miles. Reasonable figure. For particulars address Burgess & Packard (H. A. Hawthorne, Agent), 131 State St., Boston.

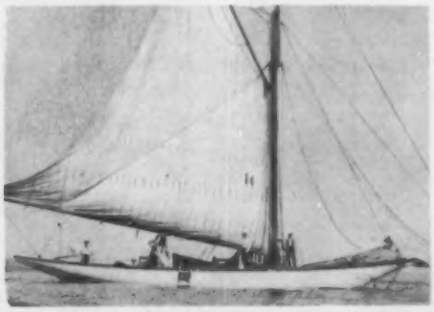
FOR SALE: Keel auxiliary cruising yawl. She is in splendid condition. Can be seen hauled out near New York. 38 ft. over all, 23 ft. water line, 8 ft. beam, 4½ draft. 3,000 pounds lead on keel. Sails in good condition, having been used two short seasons. Inventory and dinghy, 3 H. P. Palmer Engine, A1 condition. $450 in cash will buy her. She is dirt cheap at the price and must be sold. Owner leaving city. Write for particulars to D. G. EVANS, 32 Waverly Place, New York.

FOR SALE.—Cruising Launch, built by the Gas Engine & Power Co., New York. Length 40 ft. Full mahogany cabin. Ten horsepower engine. Compressed Acetylene lighting and cooking. Everything strictly first class. Price low. Want larger boat.

C. A. RUSSELL, P. O. Box 304, Toledo, Ohio.

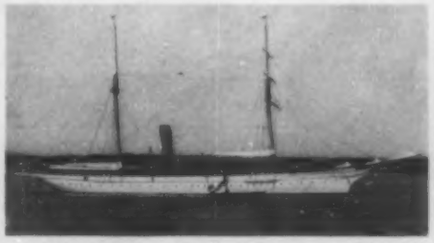
Exceedingly attractive Lawley 100 ft. modern up-to-date power yacht in commission. Beautifully finished, fitted and furnished. Equipped with 300 h.p. Standard motor; speed 15 knots; electric lights, etc.; large dining saloon in forward deckhouse; steers from bridge, has liberal accommodations in owner's and guests' quarters. Separate toilet room; all conveniences. Carries launch and small boat on davits. For further particulars apply to Cox & Stevens, 15 William Street, New York City.

No. 2076—150 ft. sea going English steam yacht for sale or charter, very reasonable terms, belongs to an Estate. One of the most satisfactory vessels designed by the late G. L. Watson. Has immense owner's room and bath forward, and seven staterooms and two bath rooms aft. Galley and pantry on deck. Two deck houses, the forward being used for dining saloon, and the after as smoking room. Has been thoroughly overhauled and put in perfect condition this year. For further particulars apply to Cox & Stevens, William Gardner, Mannings Yacht Agency, Henry J. Gielow, Frank Bowne Jones of New York, and Hollis Burgess, Boston, Mass.



FOR SALE—Yacht "Neva," 47 foot waterline keel sloop, 67 ft. o. a., 11 ft. beam, 10 ft. draft; in good condition, built with oak frames and planking; companionway and skylights mahogany; 6 ft. clear head room in cabin; four berths in cabin, two forward: sails and all rigging new 1906, full cruising equipment; dishes, bedding, shipmate range, code flags, new 16 ft. dinghy. A fast and able cruiser, offered at a bargain. Can be seen at Oakley Street and North Branch, Chicago, Ills. Apply to A. M. Cox, 4524 Lake Avenue, Chicago, Ills.

SMALL YACHT CLUB is offered unusual opportunity to secure extra desirable summer quarters. Modern reinforced concrete building, just finished, directly on beach, three verandahs, ten rooms, six bath houses with shower, convenient to protected government anchorage. Large light cellar, every convenience. Sold very low, or rent for season furnished, $360, applicable to purchase price if desired. Opposite Horton's Point Light. Unsurpassed sea view. 20 minutes from Station, Shore Line. BOX 311, CLINTON, CONN.



The above sea-going Steam Yacht offered for sale at an attractive price.

I also have all the better Steam, Gasoline, Auxiliary and Sail Yachts that are available for purchase or charter. Prices, particulars, etc., upon request.

FRANK BOWNE JONES,
Yacht Agent, 29 Broadway, New York.

An attractive, flush-deck, keel, Lawley Schooner, 65 feet on deck, 44 feet w. l., 14 feet 6 inches beam, 9 feet draught. Construction and equipment of the best throughout. Excellent condition, able sea-boat with a fair turn of speed. Has most approved plumbing arrangement. The quarters are roomy and consist of saloon with berth each side, two large staterooms, toilet, galley and forecastle. Spars, sails, rigging and outfit, all in good order. Galley has large refrigerator, dish rack, sink, stove and all necessary fittings. Head room 6 feet 2 inches in the clear. Finish is very handsome throughout. For further information apply to Cox & Stevens, 15 William Street, New York City.

No. 4060—For Sale—(See Illustration). Cruising launch, built by day's work; 42x9.6x3. A-1 construction throughout. Copper fastenings. Mahogany cabinhouse. Cabin provides over 6 ft. headroom, four extension transoms, buffet, sideboard, mahogany desk, etc., and is neatly finished in butternut and mahogany. Sleeps 4 and man. Extra large toilet room; galley. 20-h.p. Craig motor gives speed of 10 miles. Completely equipped for cruising. She represents the latest type low glass cabin cruiser, affording excellent light and ventilation. Her extreme freeboard and flare forward makes her particularly seaworthy. Will be sold cheap. Address Stanley M. Seaman, 220 Broadway, New York.

The NEPTUNE MARINE CONSTRUCTION COMPANY, 150 Nassau Street, New York City, Offers the Following List of Boats For Sale:

FOR SALE.—Three passenger or freight steamers, 97 feet over all, 17 feet 6 inches beam. Built of white oak 2-inch planking. Draught 5 feet, speed 14 miles per hour. Engines compound 12-22-12. Independent air pump. Boilers allowed 125 lbs. PRICE OF EACH, $8,500.00.

HUNTING CABIN LAUNCH ROVER. Length 25 ft., beam 7 ft., draught 30 inches. Broad V shaped mahogany stern. New 10 H. P. 2 cyl. Palmer Splitdorf coil. Mahogany sky-light and square removable windows and removable kahki canopy and side curtains enclosing cockpit. Cabin finished in oak, mahogany and white enamel. Specially made large ice chest. Price $750.00.

CABIN CAT WINDWARD. L. O. A. 29 ft.; L. W. L. 27 ft.; Beam 10½ ft.; Draught 2 ft.; Sail Area 730 sq. ft.; Cabin, Spars in good condition. Full Inventory. Price $475.00.

THE NEW POWER BOAT "DACOTA" For Sale. Built last Spring for the Commodore of the Rochester Yacht Club. Dimensions are: 70 ft. o. a., 52 ft. w. l., 13 ft. beam, 4 ft. 3 in. draught.

FOR SALE

Motor Boats

No. 101, 50 x 10 x 2.6, new cabin cruiser ready for engine. Best construction throughout. Built 1907-8.

No. 102, 36 x 7.6 x 2.8, open launch, 15 H.P. Truscott motor.

No. 113, 29 x 4 x 8½ inches. Speed boat. 15 H.P. Roberts motor. Speed 20 miles.

No. 104, 25 x 6.4, open runabout, fully equipped, 11 H.P. Ferro motor. Built 1907.

LAUNCH, ELECTA.—Length of boat, 30 feet; beam, 7½ feet; solid mahogany glass cabin, arranged for sleeping apartment, cushions, etc.; 6 horsepower Miamus motor; speed of about 8 miles an hour. Fine boat for the money.

45 x 13 x 3 10-H. P. Motor. Elegant Cabin. This boat, built by the owner for cruising and comfort, can be handled by one man. Sleeps 6 in cabin.

YAWL SAYONARA. L. O. A. 60 ft.; L. W. L. 46 ft.; Beam 12 ft.; Draught 9 ft. 2 in.; Lead Ballast. Roomy Cabin, Full Suit of Sails and Full Inventory. Price $4,000.00.

BLACK BEAUTY.—Winner of the 1907 Championship Pennant at Winneconne, July 4, defeating two crack racers, the North Butte and Fantana, over a 12 knot course. Speed, 19½ miles per hour. 35 ft. o. a.; 30 horsepower engine; double cockpit with auto seats.

AUXILIARY YACHT MASCOTTE, 63 ft. x 51 ft. 8 in. x 4 ft. 4 in. Ballast, iron. Trunk cabin. Five berths and owner's stateroom. Galley, toilet and four berths forward. 6 ft. 2 in. headroom. Twenty-five horsepower Bauers Bros. engine, 2-cylinder, 4-cycle. Full inventory.

"ALICE," MOTOR BOAT.—L. O. A., 23 ft.; Beam, 7 ft. 6 in.; Draught, 3 ft.; Cabin, Glass—let down windows; raised pilot house; air whistle; brass steering wheel; galley with ice-box, 2 Primer cooking stoves; toilet; running water; cushions. Price $650. May be seen by appointment.

FOR SALE—AUXILIARY YAWL "WAPITI;" designed by W. H. Hand, Jr.; 40 ft. x 28 ft. x 11 ft. 4 in. x 3 ft. 4 in.; 6500 lb. lead keel; hull put together with bronze bolts and screws; no iron used in construction; launched July, 1905; strictly up-to-date; bronze blocks, binnacle fittings and windlass; Edison steering gear; silk spinnacker and balloon jib; galley, with sink and refrigerator; Sands' w. c.; large mahogany cabin, 4 berths; berth for man forward; 10 h. p. 4-cylinder Buffalo engine, controlled and reversed at wheel; reverse clutch; air whistle; gives speed of 7 to 8 miles. Can be examined Buffalo, N. Y. Has proved an exceptionally fast and able boat. Built for salt water and to go South.

All interior finish made in sections, placed with brass screws to take out to permit of painting interior of hull; center-board removable through cabin, while boat is in water; fully equipped and found; pneumatic mattresses; linen, stove, etc.; up-to-date in all particulars. Fast as a cruiser under sail or power.

MOTOR BOAT. Torpedo model, 25 ft. long by 5½ ft. wide. Keel and frames of oak; deck, mahogany; brass railings and deck hardware. Four-cylinder 10 horsepower Buffalo engine; reverse gear and clutch. Tank holds 25 gallons of gasolene. Boat two years old and in A No. 1 condition.

CRUISING KNOCKABOUT OKEE. L. O. A. 31 ft.; L. W. L. 18 ft.; Beam 4 ft. 6 in. Keel Ballast Lead. Cabin. Winner of Block Island Race. PRICE $600.00.

YACHT AVIS—L. O. A., 36 ft. 6 in. L. W. L., 25 ft. Beam, 8 ft. 6 in. Draught, 5 ft. 9 in. 5,000 lbs. ballast. Patent W. C., and 3½ H. P. Mietz & Weiss Engine.

Auxiliary and Sail Boats

No. 100, 31 x 23 x 9.6 x 3, auxiliary cruising knockabout. 7 H.P. Bridgeport Motor.

No. 108, 33 x 13 x 5, auxiliary schooner. 8 H.P. Lozier motor.

No. 121, 30 x 10 x 6, racing scow. Swallow model. A1 condition.

No. 120, 40 x 12 x 6.5, auxiliary sloop. 18 H.P Standard motor.

No. 115, 31 x 17.9 x 8.3 x 2.5, knockabout, complete inventory.

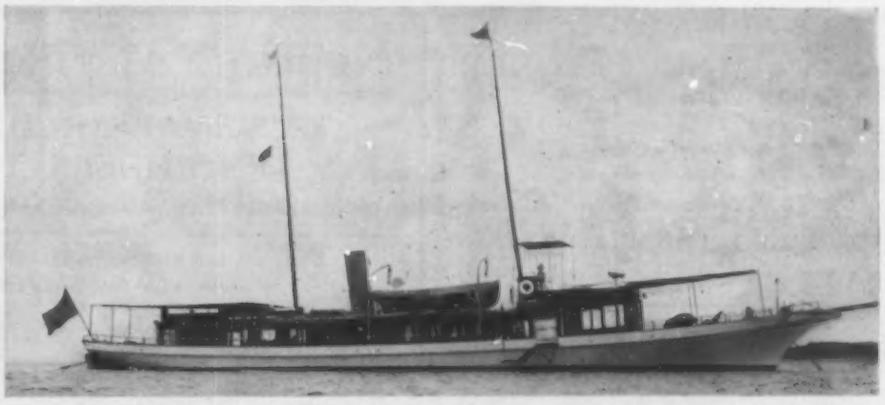
No. 118. 53 x 39.6 x 12 x 6.6, schooner. Herreshoff design.

No. 114, 21 x 14 x 9.7 x 3.6, open raceabout. Very fast.

No. 142.—34 x 21 x 10.6 x 1.9 jib and mainsail, c. b. sloop, designed and built by Shivorick, 1901. Draws about 6 ft. with board. Beautiful cruising boat, having slept as many as six. Transoms are 6 ft. long, with spring mattresses. 1700 lbs. lead ballast inside; copper fastened; cedar planking; mahogany trimmings; 1904 sails. Price decidedly low for a quick sale. For particulars, address, Burgess & Packard (H. A. Hawthorne, Agent), 131 State Street, Boston.

131.—Steam Launch, 58′ x 54′ x 9′ 6″ x 3′ 6″. Designed by Arthur Binney, built by Lawley, 1899. Copper fastened, cedar planked, mahogany house, triple expansion Lawley engine, and Lawley water tube boiler. Speed 11 knots. A beautiful launch, for sale at a price far below value. Can be inspected in Boston. For full particulars address Burgess & Packard (H. A. Hawthorne, Agent), 131 State St., Boston.

WANTED TO PURCHASE: Used Cruising gasoline yacht 38 to 42 feet over all, 9 to 12 miles per hour; sleep 5 or 6 people; salt water fitted; must be in first class condition, safe, and good rough weather boat. Send specifications and equipment, where boat can be seen and lowest cash price. Address BISON, c/o YACHTING.



No. 189—For Sale—Desirable schooner-rigged cruising motor yacht; 85 ft. o. a., 70 ft. w. l., 14 ft. 6 in. beam, 4 ft. draught; particularly serviceable for Southern waters owing to light draught and entirely coppered on bottom and above waterline. Built by Seabury Company; wood construction; materials, finish, fittings and furnishings high grade. Steers from bridge and pilot house; ample deck room fore and aft; deckhouse forward used as pilot house and saloon, with cushions and seats; following is commodious saloon used as owner's stateroom at night; next aft is large dining saloon utilized as guests' stateroom; next aft is large galley, then engine room, and finally crew's quarters; the finish throughout is in mahogany. Full headroom; all parts of the cabin are well lighted and ventilated. The furnishings are new and high grade; bureaus, dressers, wardrobes, locker room, etc. in owner's quarters. Toilet accommodations for owner and crew. Lighted throughout by electricity, with independent motor and dynamo and storage batteries. Motive power consists of six-cylinder, 110 h. p. Standard gasoline engine installed 1907; speed 12 to 14 miles an hour. Water and gasoline tanks of ample capacity for extended cruise. Equipment complete, launch and small boat on davits. Price attractive. For further particulars, price, etc., apply to H. J. Gielow, 50 Broadway, New York.

No 129.—The fastest 25 ft. Cabin boat built. Roomy and comfortable as a cruiser, with 5 ft. headroom, two wide transoms and two berths forward. Designed and built by Lawley in 1903. 50 ft. o. a., 25 ft. w. l. 12 ft. 6 in. beam, 7 ft. draft. Double Mahogany planking, and everything of the best. Large cruising inventory, including cedar tender. Rigging new last year, and all her outfit up to date. *Price very low.* For further particulars apply to Burgess & Packard (H. A. Hawthorne, Agent), 131 State Street, Boston.

No. 133—For Sale (see cut), keel, jib and mainsail, 41.8 x 30 x 9.9 x 6.8, a beautifully built Herreshoff, 1905 Sloop, splendid cruiser and has run as much as eight knots an hour. Lead outside ballast, copper and bronze fastenings, Herreshoff 1905 sails. The cabin finished in mahogany and butternut; holystoned deck. This boat is without a flaw, but will be sold at a very reasonable figure. Can be seen near Boston. For full particulars, apply to Burgess & Packard (H. A. Hawthorne, Agent), 131 State Street, Boston.

STEAM YACHTS.—The following partial list are all steel construction, both English and American build. Seagoing, Coast Cruising and Speed Types: 253 ft., 243 ft., 228 ft., 200 ft., 189 ft., 178 ft., 176 ft., 175 ft., 170 ft., 168 ft., 162 ft., 153 ft., 148 ft., 145 ft., 143 ft., 140 ft., 134 ft., 127 ft., 85 ft. Also offering 90 Steam Yachts, wood construction, 40 to 185 ft.

GASOLENE POWER CRUISERS, of latest Trunk Cabin and Flush Deck Types, with Reputable Engines: 95 ft., 94 ft., 93 ft., 90 ft., 87 ft., 86 ft., 81 ft., 80 ft., 79 ft., 79 ft., 76 ft., 75 ft., 72 ft., 71 ft., 70 ft., 68 ft., 66 ft., 65 ft., 63 ft., 61 ft., 60 ft., 58 ft., 57 ft., 55 ft., 54 ft., 52 ft., 50 ft., 47 ft., 46 ft., 45 ft., 43 ft., 42 ft., 41 ft., 40 ft., 38 ft., 37 ft., 36 ft., 35 ft., 34 ft., 33 ft., 32 ft., 30 ft., 29 ft., 28 ft., 27 ft., 26 ft., 25 ft., 23 ft. Also offering 100 other Gasolene Launches all types, 25 to 75 ft.

AUXILIARY SCHOONER AND YAWLS. Several steel construction (water-line length): 120 ft., 105 ft., 101 ft., 85 ft., 82 ft., 79 ft., 77 ft., 71 ft., 65 ft., 60 ft., 52 ft., 46 ft., 40 ft., 39 ft., 37 ft., 36 ft., 33 ft., 31 ft., 30 ft., 29 ft., 26 ft., 25 ft., 22 ft.

SCHOONERS AND YAWLS, without power (water-line length): 110 ft., 104 ft., 97 ft., 96 ft., 95 ft., 90 ft., 87 ft., 80 ft., 75 ft., 70 ft., 68 ft., 65 ft., 60 ft., 55 ft., 49 ft., 48 ft., 46 ft., 45 ft., 42 ft., 40 ft., 39 ft., 35 ft., 32 ft., 30 ft., 27 ft., 25 ft., 22 ft.

MODERN SLOOPS AND KNOCKABOUTS, some auxiliary (water-line length): 90 ft., 88 ft., 70 ft., 68 ft., 66 ft., 65 ft., 60 ft., 53 ft., 53 ft., 50 ft., 44 ft., 42 ft., 41 ft., 40 ft., 36 ft., 35 ft., 34 ft., 33 ft., 32 ft., 31 ft., 30 ft., 29 ft., 28 ft., 27 ft., 26 ft., 25 ft., 24 ft., 23 ft., 22 ft., 21 ft., 20 ft., 20 ft., 18 ft., 17 ft., 16 ft., 17 ft., 16 ft., 15 ft., 14 ft.

HOUSE BOATS.—All types, 26 to 125 ft., both steel and wood construction, with and without power, some suitable for coast cruising.

For information regarding the above, or any other Yachts on the market, call or address,

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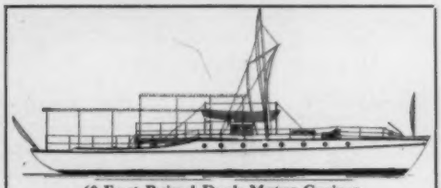

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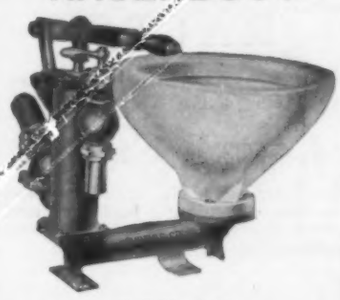

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A REAL WHISTLE

SOONER or later you've got to have a real whistle—a power whistle with enough power behind it to make itself heard. Hand whistles, squawkers, buzzers, horns, are poor substitutes for a real, powerful signal, and the Watres is the one sure signal—a deep, three-tone chime whistle with plenty of power behind it—power generated by the engine itself. There is no troublesome pump to keep packed; there is nothing to attend to after the whistle is once installed—only to pull the cord for a four-mile blast.

The Watres Whistle is operated by spent gas taken direct from the engine through the relief vent, and only so much spent gas is taken as will go through a 1-100-inch opening—about a needle-point. Even this is not taken when the reservoir is once full, so that the engine, even a little one-horse engine, is not affected in the slightest. Flexible pipe from engine to reservoir and reservoir to whistle, and everything necessary to completely install, is included in price.

The Watres Power Whistle is made in two sizes, for large and small boats, and every whistle is sold on a money-back guarantee to completely satisfy you in actual use. Also guaranteed to pass U. S. inspection.

From MAJOR J. G. R. GLASGOW
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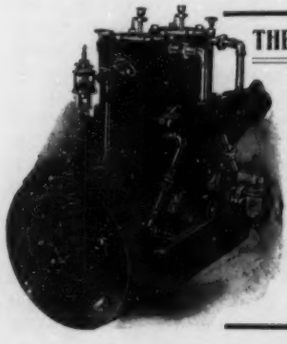

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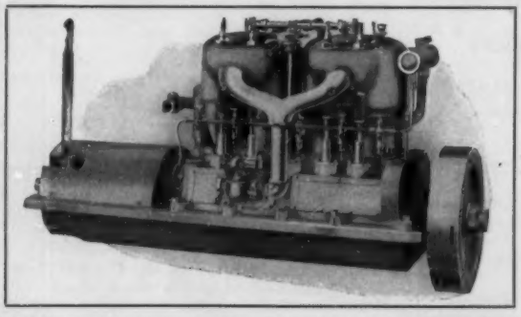

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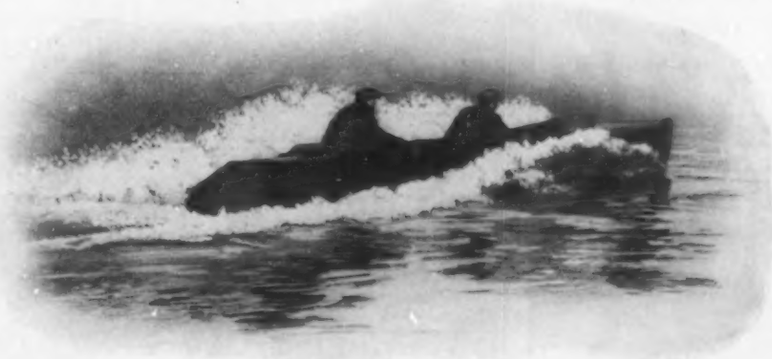

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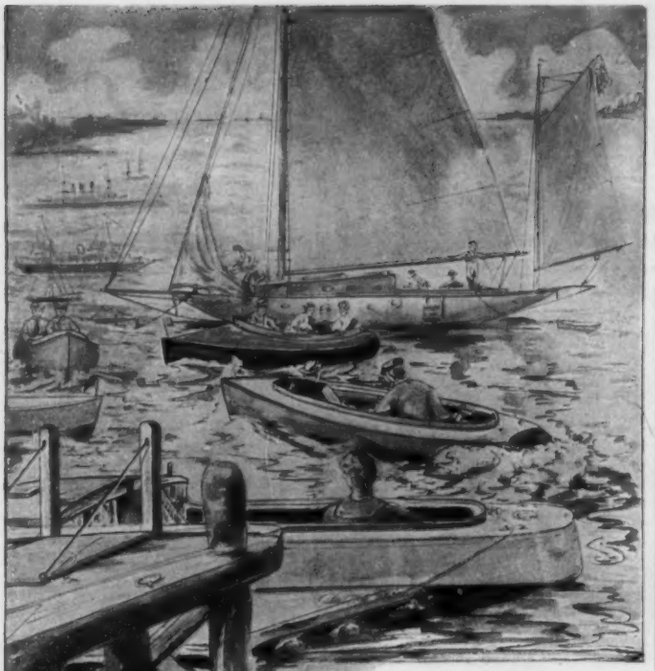

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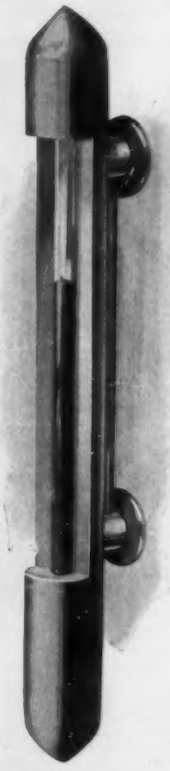

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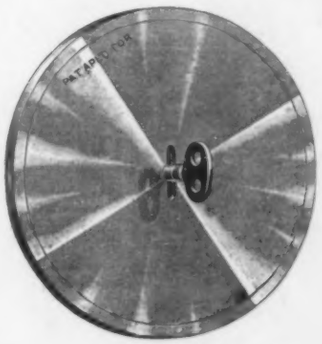

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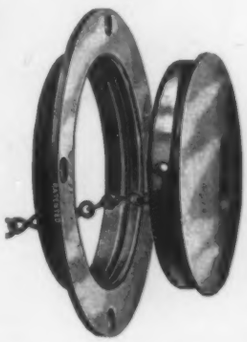

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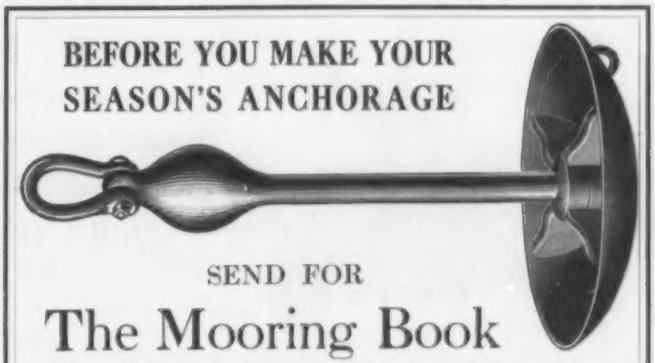

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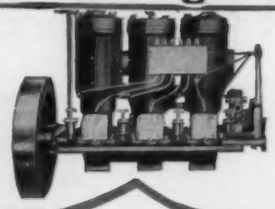

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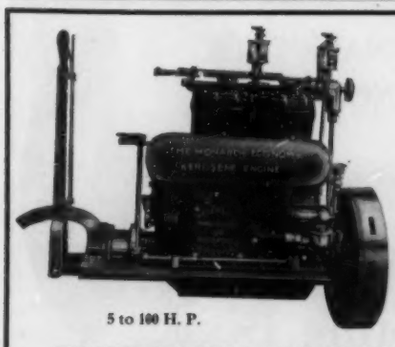

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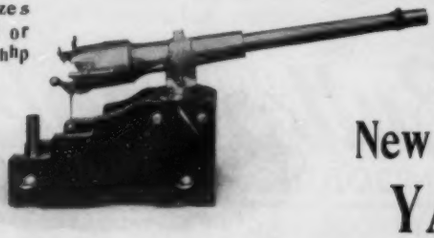

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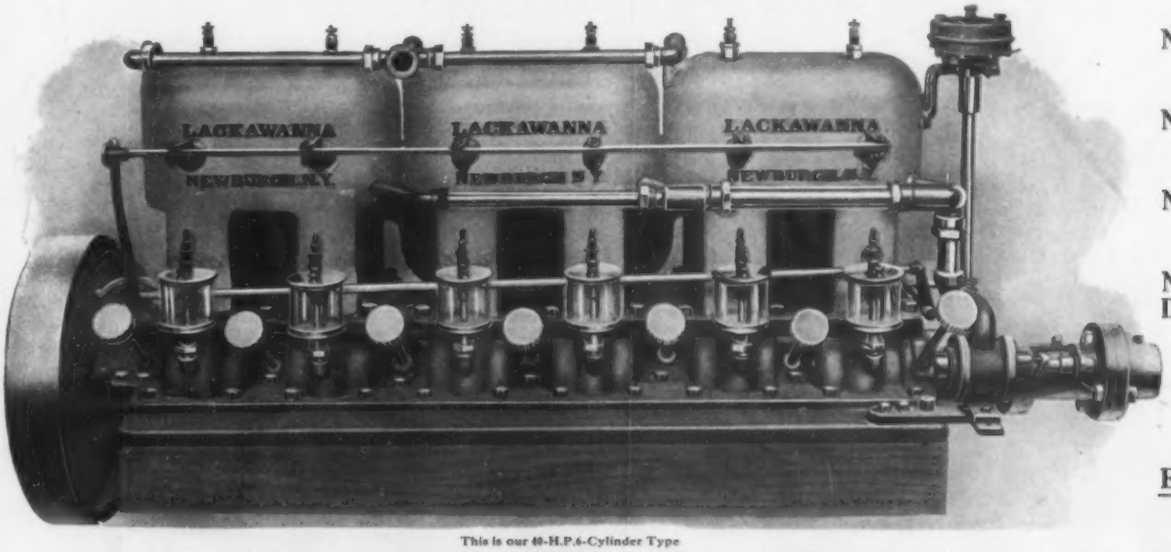

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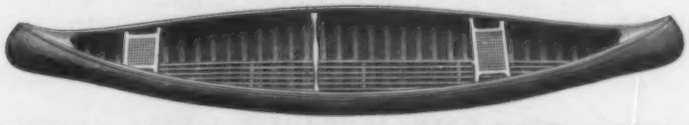

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This will guarantee that she is strongly and honestly built and in good shape.

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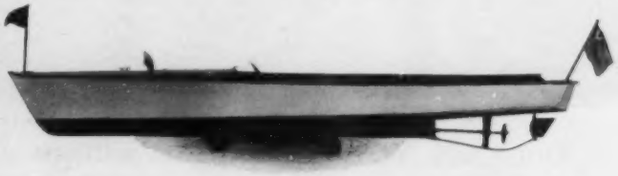
Let us send you our handsomely illustrated 1908 catalog W. It will help you greatly in making your selection.



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In conclusion, I wish to thank you for the generous and courteous treatment accorded me, and wish you continued success and prosperity during the coming year.

Yours truly, Signed—JOHN E. SCOPES, Com. A. Y. Club.

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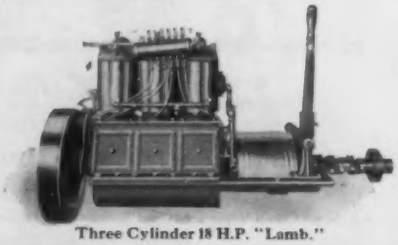
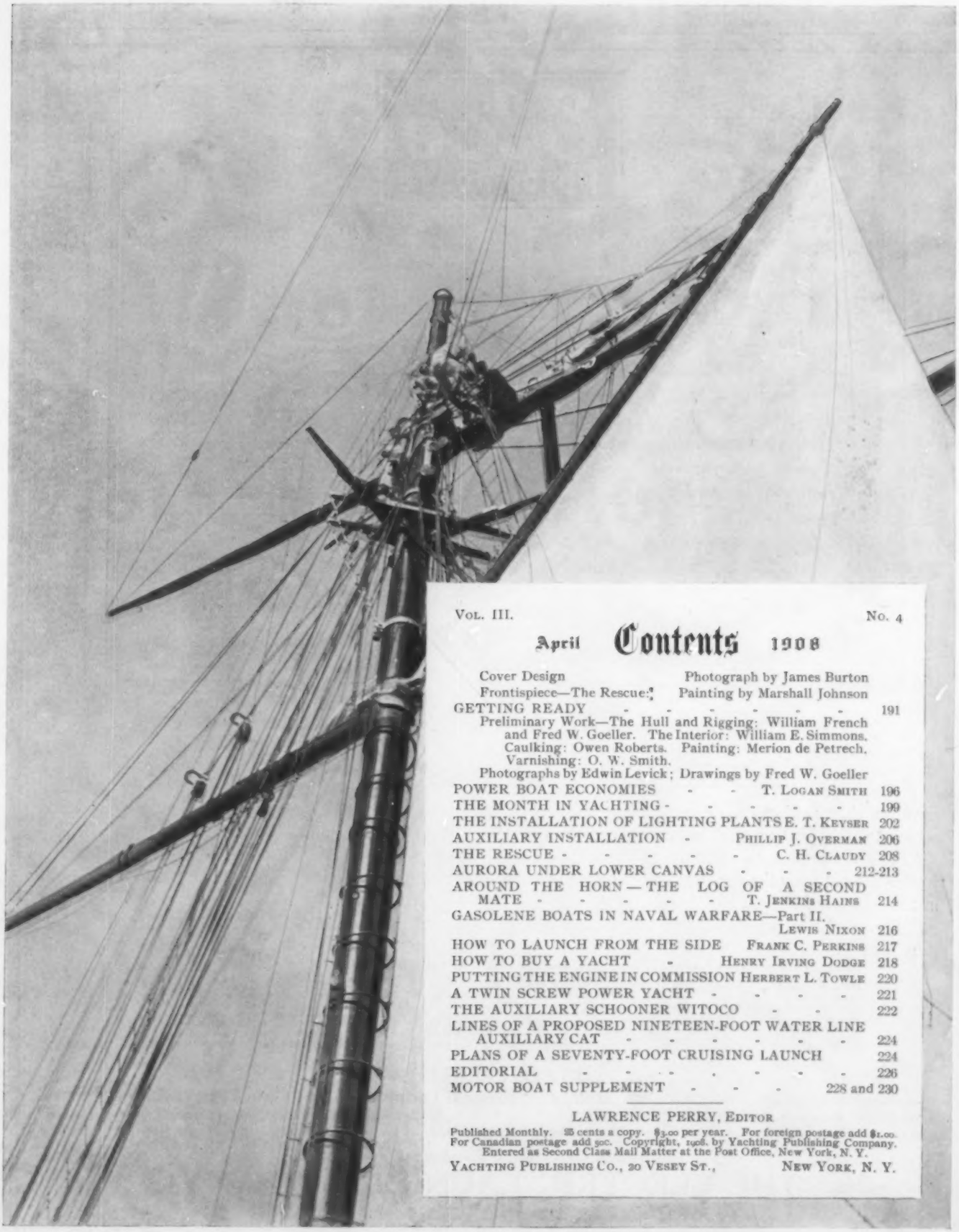


Three Cylinder 18 H.P. "Lamb."



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LAWRENCE PERRY, EDITOR

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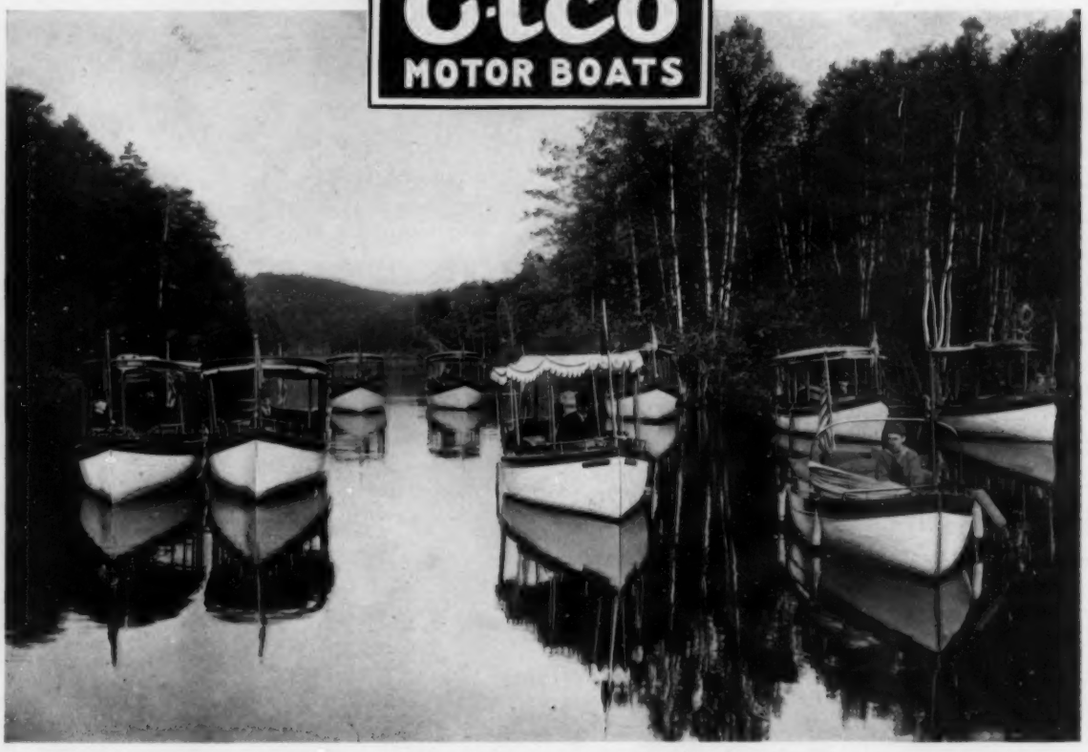
MOTOR BOATS



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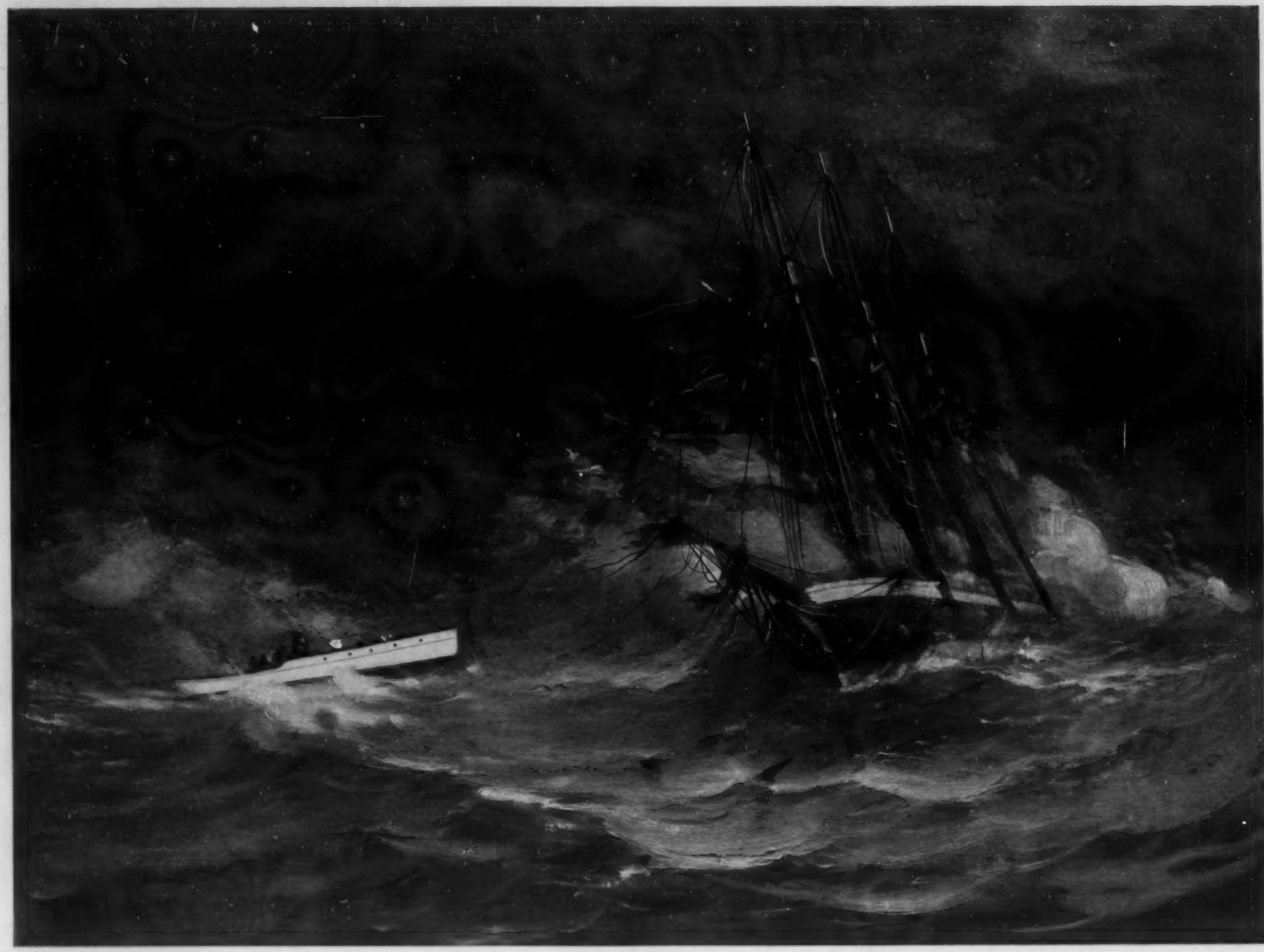

Painting by Marshall Johnson.

THE RESCUE.

"The Rescue," Page 208.

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YACHTING

VOLUME III.—NUMBER 4

April, 1908

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CAULKING A DECK SEAM. NOTE THE SUPPLY OF OAKUM ON THE HATCH COVER AND THE COLLECTION OF CAULKING IRONS OF VARIOUS SIZES.

PUTTING A NEW DECK ON A WOODEN SCHOONER. THE DECKING IS NAILED IN NARROW STRIPS AND "BLIND NAILED."

SCRAPING DOWN A WOODEN BLOCK. HARDWOOD BLOCKS SHOULD BE GONE OVER WITH A STEEL SCRAPER, VARNISH AND SANDPAPER.

Getting Ready

WHEREIN WILL BE FOUND INFORMATION WHICH WILL ENABLE THE AMATEUR YACHTSMAN TO PUT HIS BOAT IN COMMISSION—HINTS IN REGARD TO THE BILGES—THE METAL WORK AND STANDING RIGGING—PAINTING THE HULL AND UNDER BODY—TESTING THE LINE OF FLOTATION—HOW TO CAULK THE YACHT—A TREATISE ON VARNISHING—HOW IT MAY BE REMOVED OR APPLIED

Photographs by Edwin Levick; Drawings by Fred W. Goeller

THE lot of the man who is competent to fit out his boat for the season is a pleasant one. If he owns the slip where the craft lies what greater joy can he have on shore when, long before settled weather, while it still freezes hard over night, he goes down, looks the boat over, probably pulls a corner of the canvas up, and goes on board? Then begins his work. He makes note of all that needs to be done outside of the regular routine, calls to mind all those things which he promised himself to change, improve, or repair, the next time he hauled her out. Mentally, or better on paper, he makes out a program of what he means to do.

PRELIMINARY WORK—THE HULL AND RIGGING.

William French and Fred W. Goeller.

When the time for actual work arrives, the first thing is to take off covers, open hatches, start the galley stove full blast, and ventilate the whole inside so as to dry out everything. Boats sweat in winter and moisture condenses everywhere. The heat of the sun on warm days turns it into vapor, and a cold night brings the moisture to carlings, brackets, decks and projections generally. Hence, the drying-out must be very thorough.

Here a word may be said in regard to the care of covering after it is removed in the spring. Old canvas may be dried, rolled up and put away, but when fall comes the chances are that it will be necessary to buy another lot of old canvas. If a boat has been boarded over, the boards will be put away, and the only trouble with them is that they are so convenient when a piece of wood is wanted that they are steadily depleted in number.

After the boat is thoroughly dried comes the task of taking everything movable out. The oilcloth on the floor should be taken up, and then the floor boards. Next, the ballast should be removed, whether it be in the form of pigs, copper slag, or old junk. Put it all aside where you can give it a wash or a scrub with an old broom. Be particular in taking up all the loose parts around the engine. In a word, get out everything down to the planking and ribs of the boat, from one end to the other, as far as possible, and it ought to be possible to reach the entire inside. Having got everything movable or that can be made movable, out of the boat, the next thing is to clean with whisk-broom and water all her planking and timbers. The bilges of every boat accumulate a surprising amount of trash during a season.

Farmers let trace chains and the iron work of farm wagons wear until something breaks. Then there is an accident, frequently serious. The sailor who does not overhaul his ironwork every season is like the farmer who courts disaster. Rust is all the while eating at every unprotected spot of iron; then the galvanized wire rigging must go at last, even before the protecting zinc is lost. Look out for the turnbuckles. Remember that black lead mixed with lubricating oil to the consistency of a paste is an admirable protection for screws of all kinds. It does not harden, stands any blow, and acts as a lubricant as well. See that the bobstay and all the stays leading from the bowsprit are sound, and that there is no rust around their connections. Every year sees too many failures of these important parts of the

boat's rigging, always failure from neglect and always at the worst possible time. Scrape the ironwork well or use a wire brush till the metal is bright, then give it a coating of red lead and oil.

Overhaul your running rigging if you have any. Untwist the rope so that you can see the inside of it and know whether the strands are bright and strong or whether they are full of fine dust. If the rope is very much smaller than it was when purchased, remember that the strength is diminished much more than the size of the rope. A rope half an inch in diameter by wear and strain easily shrinks one-half in size. It wears both outside and in. Don't trust an old sheet and an old halliard.

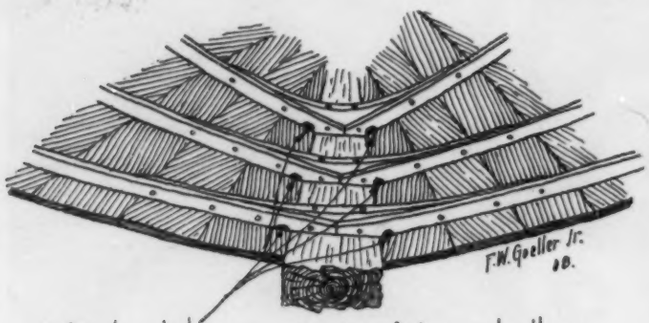

F.W. Goeller Jr.
Limber holes on underside of frames to allow water to run freely from one space to another.
A common practice nowadays is to make a groove on the centreline of the keel

FIGURE I.

They always give out at dangerous times. To part a sheet at a critical moment may pile a boat upon the rocks. Look after the blocks and especially the nice bronze affairs that are so pretty and so costly. See that the split pin that holds the pin of the shackle in place has not been opened too many times. Put in a new one in any event, and a steel one at that. Where such blocks are hauled across the fore stay by the jib sheet the split pin gets hard usage, and it is not an uncommon thing to have a block and shackle part company just as one is going in stays. The writer has had this accident occur at just such a critical time.

Scraping and varnishing tenders and dinghies is a matter of importance, and one thing should be especially noted—they should not be left until every seam is tight. A greater nuisance than leaky dinghies can't be found.

In the motor boat, after the coverings are taken off and inventory of repairs and the like is taken, so that the work may be done as quickly as possible; if the engine is not too large, it is a good plan to take it out of the hull and overhaul it. This subject is treated in another part of this article. It is preferable to do the painting first, so that any paint that may fall on the varnished work is removed when that is scraped and sandpapered. Clean the inside of the hull thoroughly, and while doing it, it is well to look over the fastenings of the frames and especially of the engine bed, and any repairs necessary should be made at once. There should be sections of the floor in cockpit or cabin to lift out to allow cleaning out the limber holes and along the keel generally.

Every boat should have large limber holes cut on the under side of the frames to allow the water to pass from one space (between frames) to another, so that the water does not remain in one compartment and rot the heels of the frames and the planking. (See Fig. I.)

If your water line is cut in fair, all right, but if not, it should be done, as an uneven line detracts very much from the looks of any boat, be it good, bad or indifferent. Probably as simple a method as any for getting your water line straight is as follows: First, see that your boat is on an even keel. This is done both by dropping a plumb line at the stem and stern and by putting a level across the coaming, making sure that the coaming is the same height on both sides.

Next, take two horses or joists on end, blocked up to a height corresponding to the point where the water line cuts the stem and stern, and by stretching a line between them mark where it touches the hull. By shifting the string, several points are got, through which the water line is drawn. Take a thin batten and nail lightly to the hull, being sure that it is up to the marks. Scratch in your line with the point of an awl or some sharp tool and you can always find it again.

THE INTERIOR.

William E. Simmons.

The interior of the yacht demands as much attention as the exterior, if you would have an agreeable and comfortable cabin. Unpleasant odors are not uncommon accompaniments of yachting, and in cruising I have slept in more than one distressingly damp berth. These annoyances are direct consequences of failure to put the yacht in proper condition while fitting out. Unless the interior is thoroughly cleaned and dried then, it cannot be made so later in the season.

Don't attempt to fit your yacht out in the water. She cannot be thoroughly cleansed without flooding her hold, and though the water may be pumped out the dirt will remain. Besides, the hold can't be properly dried if she is not hauled out. So put the yacht on the ways or the beach, pull out the plugs and douse her. Use fresh instead of salt water, for salt water will not clean off the dirt, and, preferably, hot water, if you can get it.

While the scrubbing is in order, don't forget the lockers, especially the food lockers. These should be carefully cleaned with water, soap and ammonia. The plumbing must also be examined, so that defects may be remedied before the yacht is put overboard.

A very important detail of outfitting is the cleaning of the water tanks. Pure water is essential to health as well as comfort, and it cannot be had if the tanks are unclean. Fill them about half full with hot water and strong lye. Agitate the water well with a mop or flat stick and then draw it off through the faucet. If it should prove very dirty, give the tank another bath. Finally, rinse the tank thoroughly with clear, cold water.

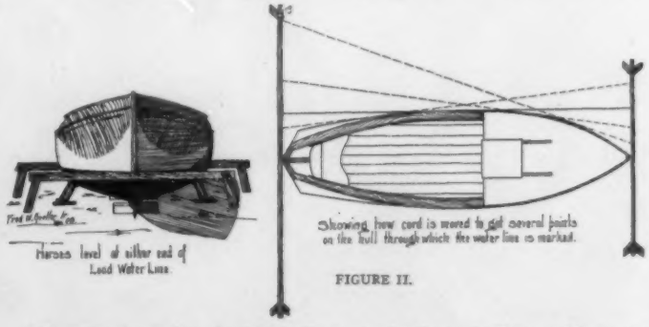

Horses level at other end of Load Water Line
Showing how cord is moved to get several points on the hull through which the water line is marked.

FIGURE II.

If your boat has inside ballast, each piece, before taking out, should be marked so that it can be replaced in its proper position. This is necessary to preserve the trim of the yacht, for the right trim is an essential element of speed. Many a yacht has had her wings clipped by failure to properly replace the ballast after it has been taken out. The owner finds that his yacht is not going as well as in the previous season, but having failed to note the changing of ballast, is at a loss to account for the fact. The only way to insure exact replacing of ballast is to begin, say aft, with the piece next the keelson and mark, according to the hand, Port 1, Port 2, or Starboard 1, Starboard 2, and so on. If the

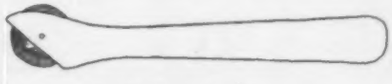
ballast consists of iron pigs, they should be given a coat of red lead to keep them from rusting. Lead pigs need not be coated, because they resist the corrosive action of salt water.

If your yacht be of metal, the ribs and inner side of the plates will be benefited by a coating of white or red lead, but if it be of wood, leave the timbers and planking unpainted. Paint, by covering defects, will do more harm than good and give unnecessary trouble when looking for a leak or a rotting plank or timber. And concerning leaks, if your yacht has a centerboard, look well to the joining of the trunk and hull. The most obscure and persistent leaks are apt to occur there. I have known a yacht that never leaked a drop at anchor to leak very badly under sail. It cost a good deal of time and money to discover that a slight working of the centerboard trunk caused the leak.

Another interior fixture requiring careful scrutiny is the step of the mast. No part of the boat is subjected to greater strain than this. The socket is liable to work loose as well as the wedges, and unless these are firm and sound, your yacht is neither safe nor comfortable. What, for example, is more disquieting than a working mast, or more trying to the nerves than a creaking one? I would much rather be ashore than aboard a yacht with either. But such disturbing factors should not enter into yachting, because they can be eliminated by ordinary precaution in fitting out. The braces of the deck around the mast-hole should also be looked over, as, like all other parts subjected to strain, they are liable to wear out.

A word about the upholstery. It is to be presumed that your cushions, mattresses, curtains, etc., were taken out at the laying up and stored in a dry loft. If not, they should be thoroughly aired and sun dried before the yacht goes into commission. These things were probably pretty damp before the close of the previous season and several days of good sunning will be required to properly dry them. Damp upholstery makes a cabin woefully uncomfortable and it is also a fruitful cause of bad odors.

The cabin fittings and fixtures, of course, need a general overlooking. Last season's wear is pretty sure to have made a screw loose somewhere, with the result that a locker door is hard to open or close, or a molding has sprung. A nail or screw put in where it is wanted, a broken fastening mended now, will save annoyance later on.



Caulking Wheel.

The engine bed in all launches should be as long as possible and thoroughly fastened to frames, so that the vibration of the engine is absorbed by the hull. Few things are more disagreeable on a power boat than excessive vibration where it causes everybody to shake so that conversation is next to impossible.

One improvement that may help to strengthen the engine bed if it is a short one and to eliminate vibration, is a stringer along either side of the bed, securely fastened to it, running as far forward and aft as possible and screwed to the frames. (See Fig. 2.)

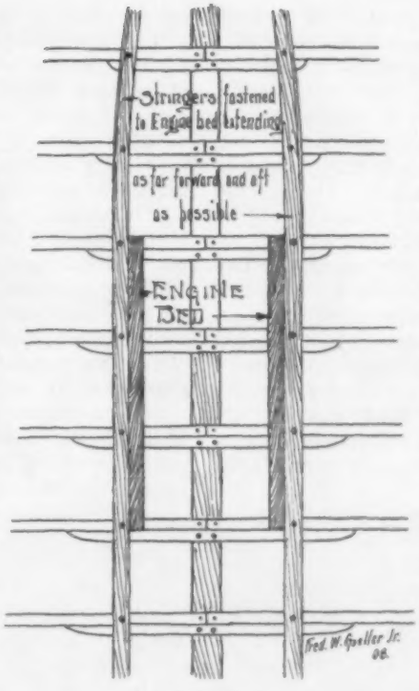


FIGURE 2.

CAULKING.

By Owen Roberts.

If the boat leaked the previous season and needs caulking in places, it would be well to clean out the seam where the caulking is to be done with a piece of sharpened wire. If the seam is too tight to do this and only needs a little additional caulking, it may be opened by driving the caulking iron in a little way all along or by running the caulking wheel in it.

In small boats it is preferable to use either caulking cotton or wicking and not oakum, as the latter is too coarse for small seams.

The accompanying sketch of a caulking iron and also a caulking wheel shows the proper style to use.

In driving the cotton in it is the usual practice to start from the right and work to the left. Drive the cotton in well at the beginning and keep twisting as you drive it in. After you have it started, bunch it up (according to the width of the seam) and drive it in at several places two or three inches apart along the seam, finishing up by driving it in all along.

Before caulking, the wood should be thoroughly dry, and after finishing put plenty of thin paint on the cotton to keep the water out of it. Putty all seams with white lead putty forced in well.

PAINTING.

By Merion De Petrech.

Painting is as much a part of a sailor's work as knotting, or splicing, or catting an anchor, or furling a sail. The owner of a boat, whether he superintends the work or does it himself, must learn to paint, and to varnish as well. It is not necessary to go into all the annoyances which arise from employment of regular painters. There are many, and to most men who can do any work themselves, are unendurable. It is sufficient to know that if you want any work done you'd better do it yourself. The outside of the hull, the deck-houses, and some parts of the interior should be painted. Although this is not absolutely necessary every season, yet there is so much to be done in the way of touching up and putting on finishing coats, that painting is an annual job. The first thing to do is to take off, scrub off, brush off all loose paint, scales, dirt and dust. Where the paint shows cracks or scales, a paint-burner or, better, a paint-remover must be used to remove them. Good work cannot be done over a rough surface, as the rough surface will show through the paint.

Caulking Iron.

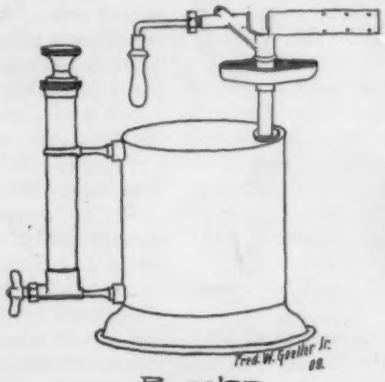
If any of the woodwork is new it must be thoroughly dry before any paint is applied. All knots and sappy streaks should be covered with orange shellac. This should be made with grain alcohol, either pure or denatured. The use of wood alcohol is dangerous to health, sometimes dangerous to life, for men will insist upon drinking it. It also has the disadvantage that it will not dissolve the shellac entirely, but only a certain portion. Since the advent of denatured alcohol, there is no excuse for using the other article. Sandpaper and the putty knife should be freely used, and holes and cracks filled with putty. On new work a priming coat is, of course, understood before puttying. The outside of the boat, if the painting is done before she is put in the water, should be scraped clean and everything removed that is loose. Outside paint that has a firm hold of the planking need not be scraped off. Some owners, however, think that all old paint should be removed down to the wood. Here again, the paint-remover has its advantage over the torch, which is dangerous and has been the cause of many accidents.

Almost every man thinks that he can paint. His idea of painting is to dip a brush into a paint-pot, give it a slap or two on the side of the pot, and brush it on to the wood. Where his brush first strikes the surface there will be a thick spot of paint and where the brush gets empty the paint will be correspondingly thin. This is all wrong, for several reasons which it is not necessary to mention. In putting on paint the coating should be as thin as may be used and still cover the surface. This is what the painter calls well brushed out. It simply means a coat of uniform thickness. Thus applied, paint dries quickly and becomes hard and firm and adheres well. In every case put on two thin coats instead of one thick one. This will pay for the extra labor by the increased durability. In the matter of brushes, get those of good size and have them good enough so that you can do satisfactory work. A small brush for a large surface is a nuisance, likewise a large brush for a small surface. In general it pays to have a brush for each color to be used. And if there is anything like a sash, or the paint has to be brought up to a bright surface, "sash tools" will be needed. In general, the round brush is best.

We next come to the question of mixing the paint. There are some owners who will settle this question by buying the ready mixed colors. It is possible, if they can deal directly with some of the great paint houses, or be sure of getting the product of the great houses, that they may get a satisfactory article. It is more probable that they will get something altogether inferior. Those who mix their own paints are more certain to obtain a durable paint than the others. It is not likely that what they get will cost much more than the ready mixed, not as much, if comparison is with the high-grade mixed paints.

We suppose that some of our friends would be horrified when we tell them that experienced men put on four or five coats, and yet the total amount of paint is not much greater than is used by those who think two coats sufficient. There is a great variety of opinion in regard to what should be used. Lead discolors rapidly where there is any sulphureted hydrogen. Thus boats lying in the harbor near sewers are easily blackened. It is for this reason that the last coat, both inside and outside of the boat, requires a certain portion of zinc white mixed with the lead.

The question always comes up as to how one shall get pure white lead. This is almost universally sold in paste form, ground in oil. With very little practice any man can test his lead and know whether he is getting pure white lead or a mixture. White lead itself consists of the carbonate of lead. This is lead which has been attacked or corroded by acetic acid and carbonic acid, the result being a white powder, chemically known as carbonate of lead. Now, if a tiny bit of the lead, perhaps as big as a pea, is placed in the hollow of a piece of charcoal, or a bit of asbestos cloth, it takes only a small blowpipe and a candle flame to reduce the white lead to the metallic state.



BURNER.

By putting the point of the blowpipe into the flame and blowing gently, a fine and very hot flame is obtained, which near the outer end shows a point of blue. This point is the reducing section, as it is called, and if directed upon a piece of white lead, will reduce that lead to the metallic state. A piece of charcoal with a small cavity scooped so near the edge that it can easily be reached by the flame is the easiest method of making the experiment. If one or more liquid globules of lead form, leaving no residue, it may be taken for granted that the lead is pure. Adulterations prevent the lead from being entirely reduced to the metallic state, the adulteration remaining as an ash-like residue.

Testing linseed oil is not so easy There is no absolute test for it. Fish oil and rosin oil when mixed with linseed oil give a rank odor. Linseed oil when rubbed briskly between the hands has the pleasant odor of flaxseed. If a few drops of linseed oil placed upon a black surface show a bluish tinge on the edge, like that of kerosene, one may be pretty certain that there has been an adulteration by the use of petroleum.

Having obtained a pure white lead and as good a quality of linseed oil as possible, the next question is, how shall it be mixed? For boat work, with each 100 pounds of pure white lead, if the boat is planked with hard pine, mix five gallons raw linseed oil, two gallons turpentine, 1½ pints pure white turpentine Japan. White pine planking absorbs more and six gallons of linseed oil should be used. There may be cases where the quantity of turpentine should be increased by a half-gallon or even a gallon. When this is done the specified amount of linseed oil should be diminished by the increased amount of turpentine.

When the first or priming coat is thoroughly dry, putty up all nail-holes, dents, cracks, or other defects in the surface with pure linseed oil putty, which should be made of equal parts of lead and whiting. Ordinary putty is not fit for marine work. It does not stand the weather well. The white lead putty is improved by adding an ounce of litharge to every five ounces of white lead used in the mixture. This assists the drying and becomes very hard. It is not affected by water.

When the drying and puttying have been finished, we are ready for the second coat. The mixture for this should be for each 100 pounds of white lead, one and a half gallons turpentine, one and a half pints of Japan drier and one and a half gallons of raw linseed oil. For the third coat each 100 pounds of white lead takes one-half gallon of raw linseed oil, two gallons of turpentine and one and a half pints of Japan drier. Where five coats are put on, the fourth will be the same as the third, but the last or outside coat should be made up with one-fifth to one-third zinc white, that is, one-third zinc and two-thirds white lead, or twenty per cent. of zinc and the remainder white lead. The oil, turpentine drier, etc., are the same as the third coat. This is what is popularly known as "yacht" white. As a finishing coat it is supposed to excel any other mixture. The zinc prevents discoloration to a great extent.

For interior work, if the wood has not been painted before, the first step is to give a coat of orange shellac. This covers up dents, stains, knots and such places, and insures a firm, hard body for the paint; and then follow two or three coats of "flat" white. For this, to each 100 pounds of lead, one-half gallon of raw linseed oil, from two to two and a half gallons of turpentine, and one pint of turpentine white drier will be about right. For a gloss finish on the interior work of a boat, after the painting has dried, a little different mixture is needed. From the lead pour off all the oil that you can and then mix one-eighth varnish and seven-eighths turpentine and proceed as before. Some people get an eggshell gloss by using a gallon of raw linseed oil, two gallons of turpentine and a pint of turpentine white drier to the 100 pounds of lead. The use of the varnish makes rather a better job.

The yacht white should be put on very thin, and it is to be observed that the work should be sandpapered between all of the coats. No. O is best for the purpose.

On old work, if the surface has cracked or scaled, it must be sandpapered with No. ½ to No. 1 sandpaper, then it must be well dusted.

If the work is to be color, put on the color first and use a little color in the final coats. If the weather is damp or very

cold, one-quarter to one-half pint additional of turpentine Japan may be used with advantage. By all means, have the under coats thoroughly dried before putting on others.

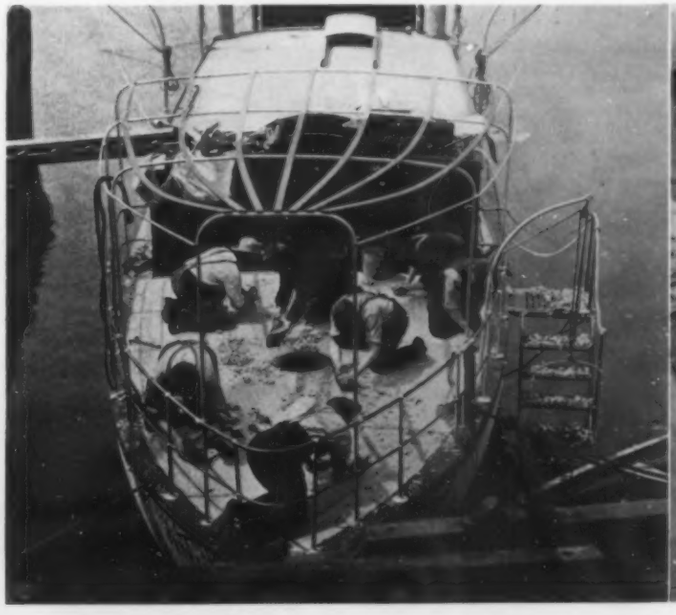
To paint the bottom of a boat it is, of course, necessary to have her out of water and in places where there is no tide there is no escape from hauling out. Fortunately, on fresh water, weeds, shell fish, and the toredo are not troublesome items, so that the bottom coating of the boat may last a much longer time than on salt water. Unless it be a racing craft, the bottom of a fresh water boat need give the owner no trouble during the season. Some brands of paint last a surprising length of time on our inland waters. On salt water the boat owner is always looking for trouble and he always finds it, at least, if he looks for it in the bottom of his boat. For this reason, a copper anti-fouling paint is indispensable. When it becomes necessary to give the body a coat of paint after the annual hauling out, one selects a spring time and gets the boat as far up the beach as possible. For boats of moderate length and size which do not have a fin keel, get them head on to the beach, then before she takes the ground too hard, swing at a small angle, and if she has masts, get a line out from the masthead to the shore, so that she will not heel over toward the water. For a draught of 4 ft. or 4 ft. 6 in. she can be put so far out of water that one side can be painted before the next high tide. At the following high tide she can be swung around in such a position that the other side can have a coat of paint. When dealing with a fin keel, probably the best way would be to haul out and not attempt to use the beach.

There are some copper paints which have the peculiar quality of sticking to wet wood. A little vigorous brushing and the paint takes the wood and drives the water off. In putting it on, it needs to be well rubbed into the wood. How much "anti-fouling" there is in some of these paints the writer knows by experience, having scraped young oysters an inch in diameter from the hull two weeks after it had been painted with a good copper paint. However, such a paint will protect the hull from the ship worm (toredo navalis), and the oysters and barnacles can be scraped off at leisure without too great exertion. There is no use whatever in giving directions for mixing paints for the boat's bottom. They must be purchased ready mixed. Therefore, we advise purchasing an article which those who have had experience are able to recommend. But remember that a paint that has given excellent service in one harbor may not show as well in some other.

VARNISHING.

By O. W. Smith.

By common consent, all wood varnished so as to show the natural color of the grain, that is, not painted, is called "bright." All bright work is to be cleaned or scraped until new wood is reached, then coats of varnish are applied to protect the wood. The average man in this kind of work gets on best with a three-cornered scraper, having a handle. The common carpenter's steel scraper will answer just as well when one gets accustomed to using it, and any bit of sheet steel, like a scrap of an old saw, will answer for a scraper when one side of it is filed with a small bevel.



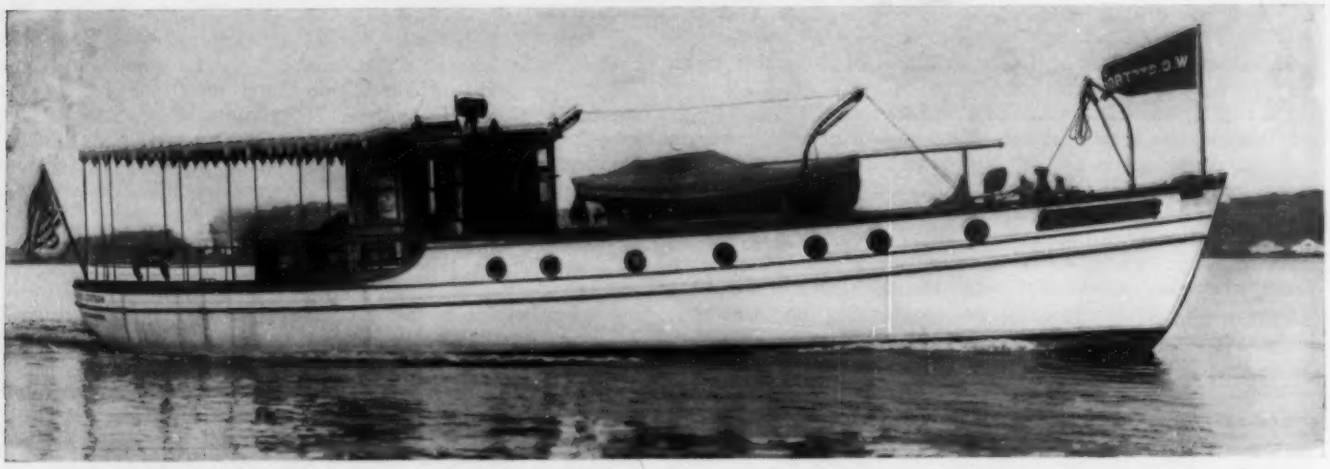
GETTING DOWN TO THE WOOD. WHEN THIS DECK HAS BEEN PLANED DOWN AND SMOOTHED OFF WITH SANDPAPER AND VARNISHED, IT WILL LOOK LIKE NEW.

CAULKING A SEAM IN THE HULL PLANKING. THE CAULKER WORKS FROM RIGHT TO LEFT, OPENING THE SEAM, TWISTING AND PUTTING IN THE OAKUM OR COTTON AND HAMMERING IT INTO PLACE AS HE GOES ALONG.

In finishing up on the varnished work, if the old varnish is to be removed, the cheapest way is to buy ten cents worth of oxalic acid and dissolve it in fresh water. Put plenty on. After the first application has dried put on a second and scrape while it is still damp.

It will be found that by this method the old varnish is easily removed. As soon as it is scraped, sandpaper the wood till perfectly smooth and put on a coat of varnish as soon as possible, for while the oxalic acid bleaches out the wood, if a drop of water falls on it before the varnish is applied it immediately turns black and you will have to repeat the whole operation.

It is advisable, on bare wood, to put on two or three coats of varnish. Do not put it on too thick and spread it out well. Let each coat of varnish dry thoroughly, then rub it down with fine sandpaper, some that has already been used on unpainted wood is preferable, before applying the next coat. The thinner your coats of varnish and the more of them the better the job will be. In varnishing outside woodwork always secure the best spar



A LARGE RAISED-DECK CRUISER, TO WHOSE MANY GOOD POINTS A COMBINED PILOT HOUSE AND LOUNGING ROOM HAS BEEN ADDED.

Power Boat Economies

By T. LOGAN SMITH

"YES," said the engine builder to the prospective customer, "a 10 horsepower motor will put that boat of yours along at about 8½ miles per hour, but I have an engine of 15 horsepower that has scarcely been used. She was traded back to me for a larger motor and I can let you have that 15 horsepower affair at just the same price as I could sell you a 10." But, surprising to relate, the prospective customer did not jump at the proposition at all. "Ten horsepower is good enough for me." The engine man was clearly flabbergasted. It looked to him like throwing a bargain away.

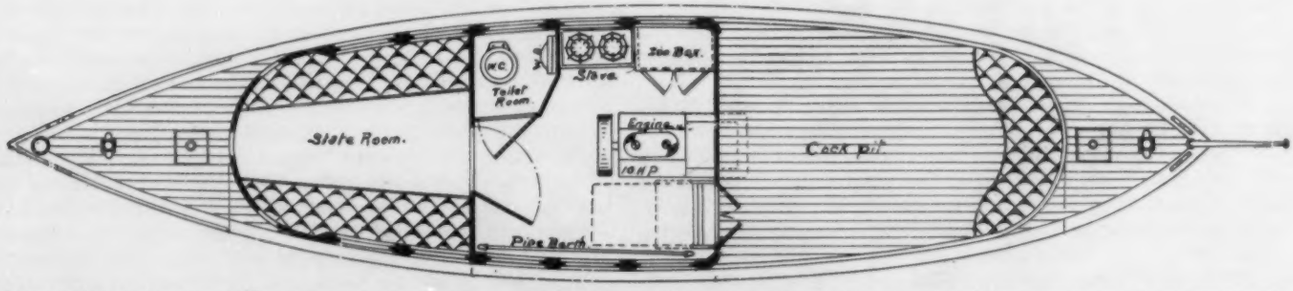
A 33-FOOT TRUNK-CABIN CRUISER OF THE TYPE WHOSE CABIN ACCOMMODATIONS ARE ILLUSTRATED BELOW. SHE IS A COMFORTABLE, ECONOMICAL CRAFT FOR TWO PERSONS TO CRUISE IN, AND FOR DAY EXCURSIONS CAN ACCOMMODATE FROM EIGHT TO TEN GUESTS.

"Why didn't you take that snap?" said the prospective customer's friend as they left the shop. "For the simple reason," said the buyer, "that I did not see any use in running up my gasolene bill 50 per cent. for the sake of getting a mile or a mile and a quarter more speed. You see it is this way; it is not so much the initial cost of the engine, but what it costs to run it during the season, that really counts That 10 horsepower engine I can really get 8½ miles out of, and at that speed my consumption of gasolene will be 1¼ gallons per hour, and at 20 cents a gallon this means a cost of fuel of 25 cents per hour.

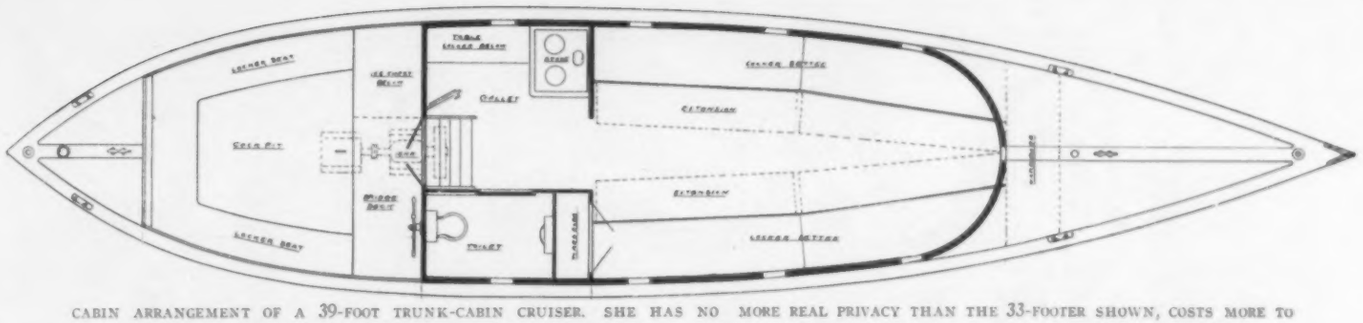
"Now suppose I had taken that fellow's offer; that 15 horsepower motor would have given me another mile per hour speed—call it 9½ at the outside. For that increase, which is very good, I allow, and very convenient and all that, I would have had to pay 38 cents per hour. This means that while on a six hours a day run with the 10 horsepower my fuel consumption would cost $1.50, with the 15 horsepower I would have to pay $2.28. And during a regular cruising season what would I have to show for this extra expenditure? Simply the difference of less than one-half an hour in running between Spuyten Duyvil and Croton Point, a distance of about 30 miles.

"What I will save by using a smaller sized motor will pretty nearly pay for hauling the craft out when the season is ended. I will have less weight to trot around; I will have less lubricating oil to use—I have not figured that in the expense, but it amounts to something—and all this just because I have been up against the game long enough to know when a bargain (and that engine certainly would have been had I any use for it) is not a bargain."

The prospective engine purchaser was one of a class of men who do a little figuring before they outfit themselves for another season. For one of this kind, who are naturally cautious or who have had the experience that makes them so there are ten others



ACCOMMODATION PLANS OF A 33-FOOT TRUNK-CABIN CRUISER, DEMONSTRATING HOW EVERY INCH OF SPACE IS UTILIZED AND WHY THIS IS AN ECONOMICAL BOAT FOR A SINGLE-HANDER TWO-PEOPLE CRUISER.



CABIN ARRANGEMENT OF A 39-FOOT TRUNK-CABIN CRUISER. SHE HAS NO MORE REAL PRIVACY THAN THE 33-FOOTER SHOWN, COSTS MORE TO MAINTAIN AND, WHILE A GOOD TYPE FOR FOUR MEN, WOULD BE RATHER LARGE FOR ONE MAN TO HANDLE AS A FAMILY CRUISER.

who will not be able to see anything beyond the fact that they are getting something good at a low figure, and this low figure of the initial cost would blind them to what the expenses would be in the long run, just the same as a quarter held close can blot out a pretty expensive bit of real estate at a distance. It is not in engines only that a little forethought and calculation is a good thing. In the selection of the craft itself there is much to be figured on before the purchase is made. Sometimes a man is too economical, then again he spends too much money for scarcely any better accommodations than he could have got in a lower-priced craft.

Just which of these faults is the worse is a pretty hard matter to determine, but here is an illustration of how some of them work out.

The first plan shows a 33-foot cruiser with a 7-foot beam. Her motor of 10 horsepower drives her eight miles an hour. She is just the sort of a craft that two men or a man and his wife could live aboard during most of the summer.

She has very fair galley accommodations, with plenty of room for sleeping purposes, and her cabin trunk and open cockpit give plenty of outdoor space. A craft such as this, well built, can be purchased quite reasonably and is an example of what can be had for a moderate amount, and moreover, is a type of boat that can be run economically at moderately low speed.

She is not a racer and there is no need of treating her as one, and her 10 horsepower motor is ample for her use.

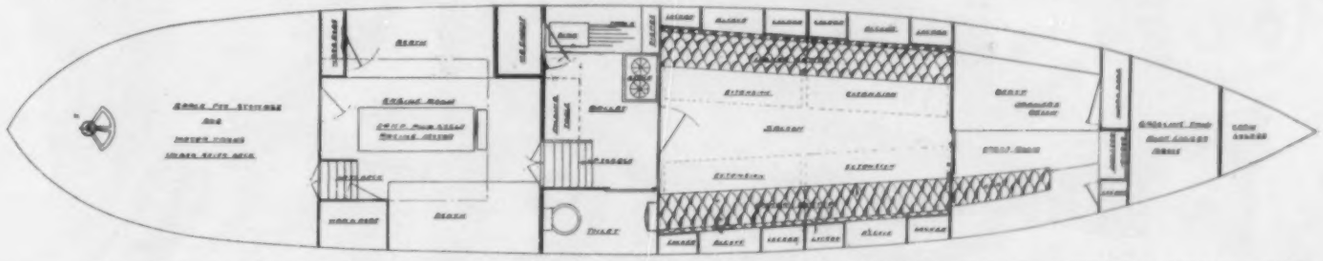
A TYPICAL CRAFT OF THE LARGER RAISED-DECK TYPE. SHE ILLUSTRATES THE GENERAL APPEARANCE OF THE 60-FOOTER WHOSE ACCOMMODATIONS ARE DESCRIBED.

Now, for a moderate increase of expenditure, this same man could have purchased a 39-foot craft. The second plan shows the accommodation plan of such a boat. It takes a 12 horsepower motor to drive this craft nine miles per hour. She will carry four persons; she has a larger cockpit and considerably more locker room and her galley is a trifle larger.

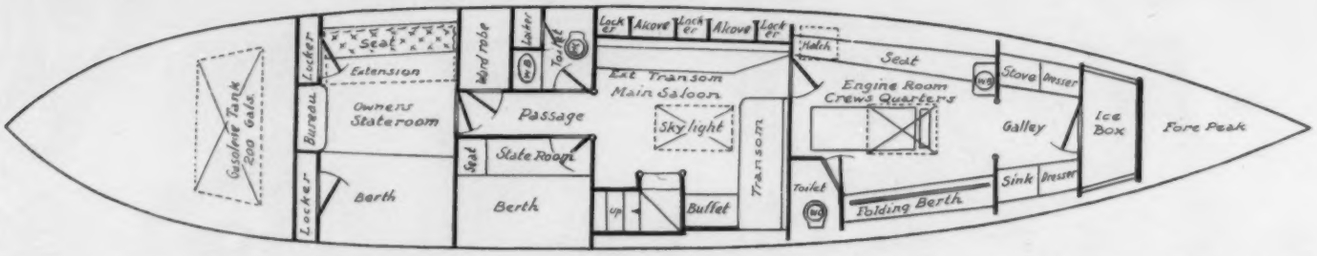
While she will carry four persons, she won't carry them as comfortably as the smaller craft will take two. As a matter of fact, even with her smaller accommodations and her lower speed, type No. 1 is probably a much better proposition, especially at the lower price at which she can be purchased and maintained.

Now, there is another side of the subject. The third diagram shows a 55-foot cruising craft. She certainly has a good deck and that central hatch which houses the engine, engineer and rest of the crew adds a mighty comfortable feature to her after flush deck. When you go inside, however, there are several points that will be noticed. The first is that, while she has a good-sized saloon amidships, she has just one stateroom in the bow. It is a comfortable and roomy stateroom, but it accommodates only one person and that is the owner. When he carries guests he must pack them away on the transoms in the saloon, and whoever sleeps in that saloon is going to be disturbed every time the owner wants to go on deck or talk with the engineer. She is a big boat, she is a handsome boat, but she is practically a one-man craft, with the exception of the crew, who have really about the best accommodations aboard of her. She thus has not any more necessary cabin room than the little 33-foot craft. On the other hand, if a man in purchasing this 55-foot boat had been willing to pay $1,000 more for a boat 5 feet longer, he would have had something so much superior to craft No. 3 that it would have been out of all proportion to the difference in cost. This craft is illustrated by the fourth diagram. She is 60 feet over all and has two staterooms, one of which will accommodate three persons. Two more can sleep comfortably in the main saloon and the arrangement is such that it does not matter how late or how early anyone wants to go to bed or how much running up and down from the deck there is, no one need be disturbed, for even the saloon can be curtained off across the stairway.

In addition to this, the crew of two are kept forward, which is where they belong, and a separate hatch on the port side, which leads down into the engine room, allows them ingress and exit



CABIN ARRANGEMENT OF A 55-FOOT RAISED-DECK CRUISER, WHICH IS PRACTICALLY A ONE MAN ACCOMMODATION CRAFT, REQUIRING A CREW OF TWO TO RUN. HER SALOON GIVES NO PRIVACY FOR SLEEPING PURPOSES.



CABIN PLAN OF A 60-FOOT RAISED-DECK CRUISER. IN ADDITION TO THE TWO STATEROOMS SHOWN, THE SALOON MAY BE ALSO CURTAINED OFF TO AFFORD PRIVACY WHEN USED AS A STATEROOM. THE CREW ARE KEPT FORWARD AND ENTIRELY APART FROM PASSENGERS.

from their quarters without going through the owner's and guests' portion of the craft. Now only five feet difference on the water line has transformed No. 3, with one private stateroom and a saloon which must always be used as a passageway, into what is practically a three-stateroom craft, where everyone can be as much by himself as he wishes and where everyone who does not want to get up until ten o'clock in the morning is not disturbed by the early riser who wants to jump overboard for an early morning plunge.

The crew's quarters are sufficient unto themselves, and except when a meal is to be served or the after deck swabbed down, the blue jacket need not be near either owner or guests. The service portion of the boat is forward and well out of the way.

The owner occupies the best part of her, as he should, and the guests are taken care of in such a way as to be independent of and secure from intrusion by each other.

The additional five feet and a clever designer has made possible a long-distance cruising yacht, with all the accommodations and facilities which this implies.

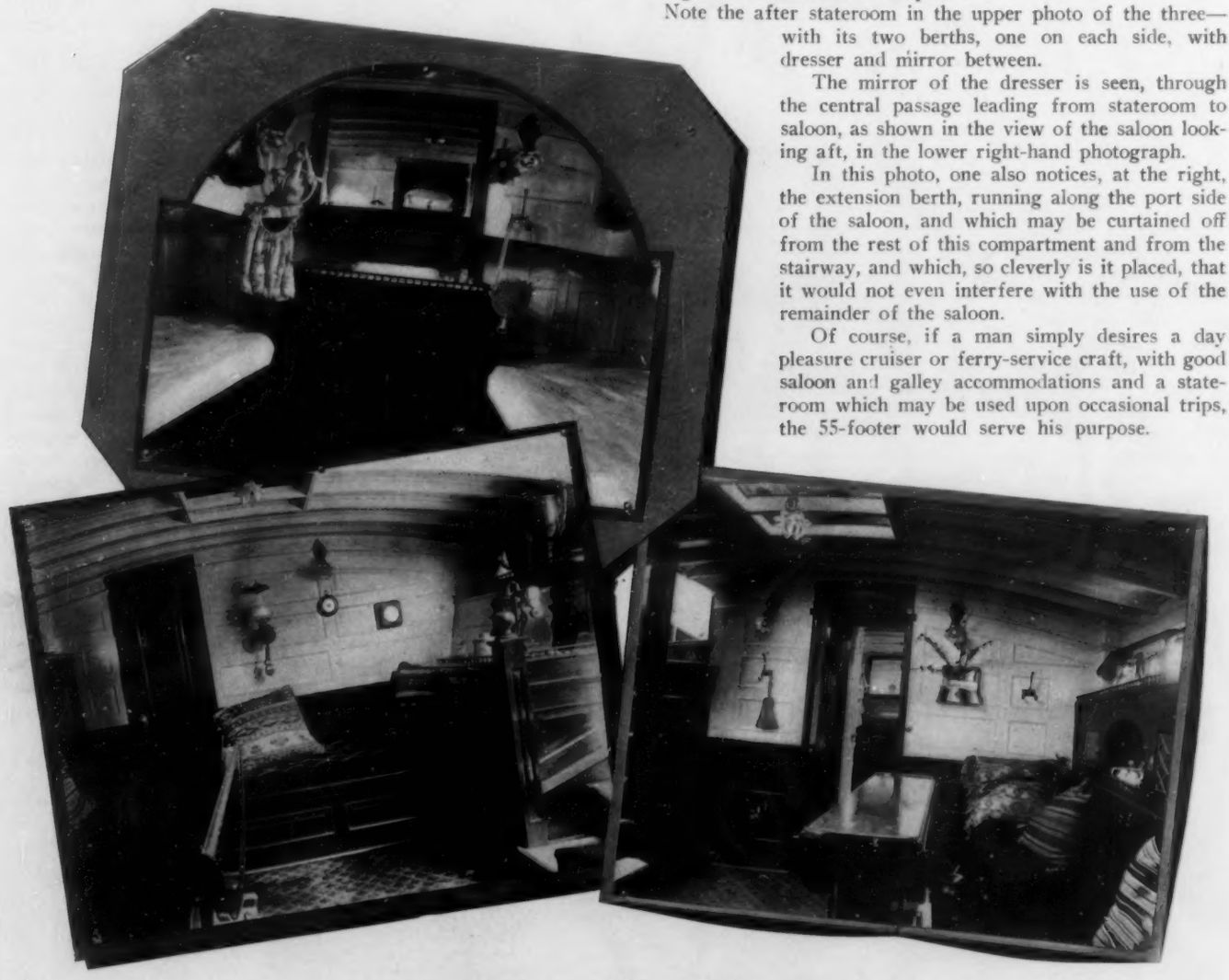
The photographs shown below will give a pretty good idea of both the details and the comfort possible under such an arrangement as shown in the plans.

Note the after stateroom in the upper photo of the three—with its two berths, one on each side, with dresser and mirror between.

The mirror of the dresser is seen, through the central passage leading from stateroom to saloon, as shown in the view of the saloon looking aft, in the lower right-hand photograph.

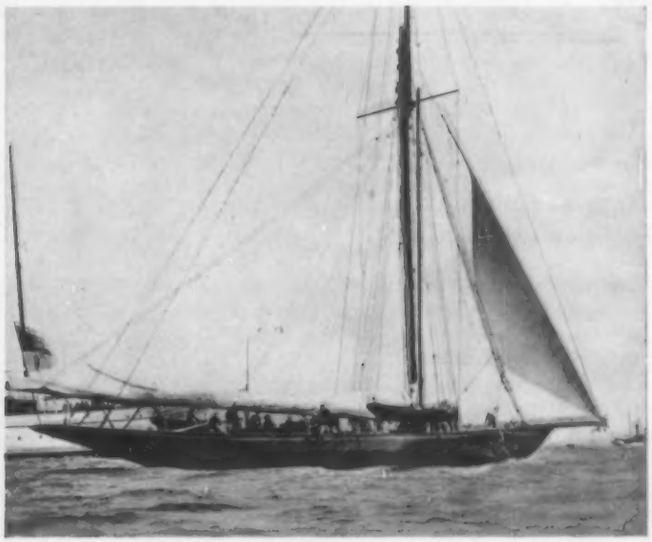
In this photo, one also notices, at the right, the extension berth, running along the port side of the saloon, and which may be curtained off from the rest of this compartment and from the stairway, and which, so cleverly is it placed, that it would not even interfere with the use of the remainder of the saloon.

Of course, if a man simply desires a day pleasure cruiser or ferry-service craft, with good saloon and galley accommodations and a stateroom which may be used upon occasional trips, the 55-footer would serve his purpose.



AFTER STATEROOM AND FORE AND AFT VIEW OF SALOON OF A CRUISER OF THE 60-FOOT TYPE DESCRIBED IN THE ARTICLE. THE COMFORT AND PRIVACY OF THE ARRANGEMENTS ARE THE STRIKING CHARACTERISTICS.

GOBLIN, THE ONE 15-FOOT SLOOP, RACING FOR THE LIPTON CUP, WHICH MET THE CLASS BUILDING RESTRICTIONS.



THE ROYAL CUTTER, BRITANNIA, AT COWES. KING EDWARD CAN BE SEEN WALKING ALONG THE DECK AMIDSHIPS.

The Month in Yachting

EXPERIENCE is the best teacher in the arrangement of long-distance motor boat races, as in many other things. If there be one element in any event, sporting or otherwise, that surely involves negative results or downright failure, it is slipshod conditions under which the event is held. It is all very well to arrange, say, a motor boat race to Bermuda or elsewhere, but if the rules framed to govern it—provided there be any rules at all—are inadequate, the race, for all the good that the sport of power boat racing will derive from the contest, might as well not be held, in fact, had better not be held.

Definite results are born only of definite achievements, and these can be obtained only when there is something definite to achieve. Rules and regulations carelessly devised mean that the observers of a contest sailed under such loose-jointed code receive no reward for their misplaced interest other than a list of emphatic don'ts, among them this: Don't bother about such poorly conducted races in the future. Now all this talk is not merely for the sake of burning a little gasolene. It is serious business, and I could name one or two long-distance races where a lecture of this sort when the contests were on the tapis would have resulted in something better than actually took place.

All of which leads to the amended conditions for the power boat race to Bermuda next June, just issued by the Bermuda Race Committee. There was room for improvement in the conditions which governed last year's event, and that they have been made is matter for congratulation for motor boatmen generally. Here we have, for instance, the requirement that in the next race the competing boats must not be more than seventy feet nor less than fifty feet over all. Seaworthy boats alone are eligible, and definition of what a seaworthy boat is in the minds of the Committee is appended as follows: "A seaworthy boat is a substantially built, full-decked vessel, having engine and living accommodations housed in, and being equipped with all the tackle and appliances necessary to enable her to perform a long passage in open water. The constant used in figuring the horsepower of the two-stroke engine is changed from 750 to 850. Fuel necessary to complete one and one-half times the distance from New York to Bermuda must be carried. Sails and necessary spars must be carried, but except the jib they must not be used save for the safety of the vessel. All boats are to be inspected by the Committee as soon as practicable after entry for the race. These are the main stipulations for the $1,000 offered by a member of the New York Yacht Club, the prize being placed jointly in the custody of the Royal Bermuda Yacht Club and the Motor Boat Club of America. In addition, a cash prize of $1,000 is offered the winner by the same member of the New York Yacht Club.

The improved conditions and the value of the prizes should result in a larger number of boats than raced last year, which were two.

The question which occasionally confronts a Regatta Committee as to whether a protest based on obvious shortcomings in structural conditions shall outweigh a general desire to slide over the vexed point in the easiest possible way and forget it, is always a delicate one. It is so easy to shuffle over a thing—to say "not guilty this time, but don't do it again," and, on the other hand, it is so decidedly unpleasant to stand up and face a club or association of clubs and say that thus and so is right—that the regulations plainly say this and say that, and that, therefore, there are not two ways about the matter.

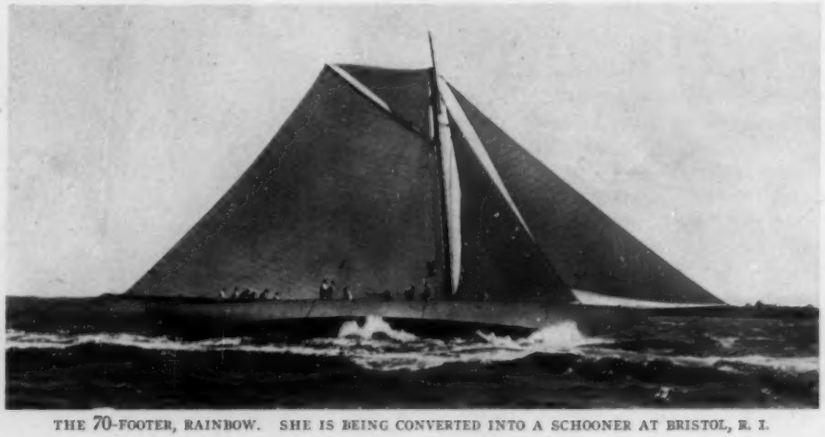
A WHOLESOME TYPE OF OCEAN RACER, AILSA CRAIG, WHICH WON LAST YEAR'S THRESH TO BERMUDA.

In the Bensonhurst case,

the Yachting Committee of the Crescent Athletic Club had to decide whether this 15-footer was entitled to the Lipton Cup in the face of the fact that she had not complied with certain restrictions and conditions, particularly in regard to head room.

Bensonhurst was one of seven 15-footers which sailed on Gravesend Bay last season in a series of ten races for a cup offered by Sir Thomas Lipton at the instance of the yachting branch of the Crescent Athletic Club. The little sloops were built under conditions calling for boats of wholesome type, and while the building restrictions may strike one as more or less overdone, in view of the size of the craft in question, yet there the restrictions were. Among other things, it was stipulated that the boats should have 3 feet 8 inches head room. All of the boats were from a fraction of an inch to two inches short of this except Goblin, whose owners, taking the rules in good faith, which is to say literally, had expressly warned designer and builders against the most minute infraction of the rules.

The infringement on restrictions became known when the report of the official measurer, Mr. Brophy, was made public in August, some time after the series had begun. Assuming that this was the first officially known of the shortcomings of six of the contestants, we reach at this point the first error on the part of the Regatta Committee in not disqualifying the sloops forthwith, in compliance with the clause in the rules governing the races, which holds that the committee in charge of the contests are empowered to disqualify, without a protest being submitted, any yacht, "should they know prior to the conclusion of a race that she has committed a breach of these rules." The next error was the failure of the owners of these boats to have them so altered as to conform to the requirements.



THE 70-FOOTER, RAINBOW. SHE IS BEING CONVERTED INTO A SCHOONER AT BRISTOL, R. I.

And so the series continued and, finally, ended with a predominance of points in favor of Bensonhurst. The owners of Goblin then filed a protest against awarding the cup to a sloop in which admittedly were violations of the rules. The protestants stated that they did not file their complaint with any idea of receiving the prize. Their boat had not won a single race of the series and they would not, of course, accept the cup in view of that fact, even if it were awarded to them.

Their action was based upon the good of the sport, holding that when boats enter in a designing, racing and building competition under explicit conditions, fail to meet those conditions, then the vital ethics of yachting are violated and injury is done to its best interests. Goblin's owners, the Messrs. Spiedel, maintain that they were not notified when the meeting of the committee to decide upon the protest was called, and that their first intimation of action was the announcement that the prize had been awarded to Bensonhurst. The decision of the committee follows in part:

"It appears from all the evidence submitted to the committee that the Messrs. Spiedel did not make their protest within the twenty-four hours limit, as called for by the rules of the Gravesend Bay Association. It further appears that the Messrs. Spiedel did not avail themselves at any time during the series of their right to protest any or all of the other boats and demand the official measurement.

"The races were sailed on the merits of the boats, and Bensonhurst scored the most points under the system of scoring accepted. Goblin did not win a single race in the series, and its owners make no claim that a strict compliance with the head room condition by the other boats would have changed the result of the races. It is conceded, however, that changes would have been made in the model of the yacht which would have appreciably increased her speed had the limitation in head room been neglected.

"The entire testimony, so far as regards the matter of head room, is to the effect that changes necessary to secure the required amount could have been easily made, and if they had been made would have added to the speed of the boats, rather than have detracted from it.

"In view of the facts, as set forth above, and regarding the spirit and intention of the donor of the cup 'for the encouragement of yacht designing, yacht building and yacht racing,' the committee does not feel justified in sustaining a technical protest made by owners who have failed to comply with the technicalities governing the making of protests. Were the protest sustained, the cup would not be awarded to the protestants, because the effect would be to declare the whole series null and void, and such a decision would violate the entire spirit in which the cup was given and the series of races undertaken.

"The committee, however, fully appreciates that the protest made by the Messrs. Spiedel was made in a spirit designed, in their belief, for the best interests of the sport, as these gentlemen have proved themselves worthy sportsmen in the past, but at the same time considers that the best interests of all are most wisely promoted by overruling this protest and awarding the cup to the yacht Bensonhurst, and the decision of the committee, therefore, is unanimous that the protest be overruled and the cup is hereby awarded in accordance with this memorandum."

All this is casuistry par excellence. The validity of the protest is recognized, and yet it is rejected. I fail to see just how the "best interests of all are most wisely" promoted by winking at patent violations of rules which are supposed to mean what they say. Certainly there will be few who maintain that the best interests of yachting are served on any such slipshod principle. Rules are not drafted for fun, just for the sake of having rules. Far from that, they bespeak the furtherance of set design and serious purpose, and anything that tends towards the subversion of these ends is nothing less than pernicious.

The news that Commodore Fred A. Price of Chicago has purchased the forty-footer Aspirant and will race her on Lake Michigan this season will give Western yachtsmen something to look forward to. Aspirant is a Gardner sloop and had great success on the Sound and ocean, having, among other things, an Astor cup, or some such famous prize, to her credit. She is not a Gardenia by any means, and yet she should be able to give the Tramels boat, Vencedor, which has been winning Mackinac cup races right along, a better run for the prize than she has ever had. This fact in itself will enhance interest in races on the great fresh water pond. It has been rather a simple matter

to stand and watch Vencedor going out through the Van Buren Street gap and pick her as the winner of the day's regatta. Aspirant, it is hoped, may be able to make prophecy a bit more difficult.

Here is a hypothetical incident born of exuberant and, I am sorry to say, utterly absurd fancy:

Shortly after the announcement that King Edward had consented to return the Royal Victoria Gold Cup to the Royal Victoria Yachting Club as a trophy for competition by sloops of the 23-metre class on the Solent next summer, a man famous not alone for his wealth, but for his devotion to the broader interests of yachting, called up one of our successful designers on the telephone.

Owner—Hello, I understand American yachts would be welcomed abroad as contestants for that Victoria Cup?

Designer (tentatively)—Yes?

Owner—Do you suppose you could turn out a yacht under our Uniform Rule that would approximate those seventy-odd footers over there?

Designer—Yes, in a general way. The question would be whether or not they require the boats built to rate at the top of the class. I do not know. In any event, it would be sort of a rough fit.

Owner—What would you do if you were about to build a boat to race on the Solent?

Designer—I'd hunt bear with the proper weapon—in other words, if I were going to build a boat to race against the 23-metre boats, I should certainly have my designer build it under the rule which obtains in Europe—the Universal Rule.

Owner—Do you think your designer would suffer a disadvantage in designing under rules with which he is not familiar?

Designer—Inexperience might make some difference. How much is a question. . . . It would not be sufficient to deter me from designing a boat under such rules and in such a class.

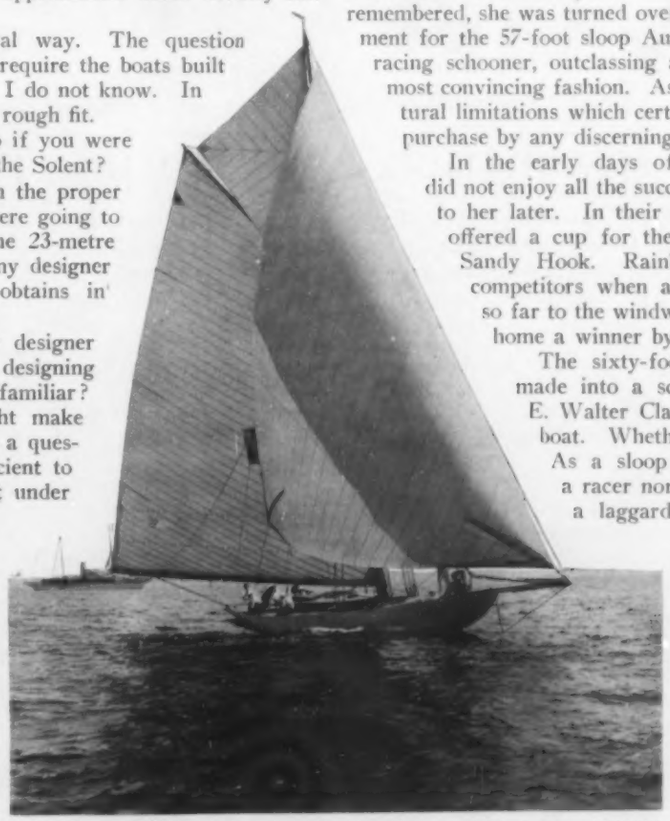
Owner—It would not?

Designer—No.

Owner—Then go ahead; study up that rule and design me a boat. Hang the expense. I want to go over to England and show those duffers what an American boat and an American skipper look like, and all I ask is that you give me the best that's in your head.

Can any reader imagine the interest which an announcement following a dialogue of this kind would cause among yachtsmen and the public in general, if not the attention bestowed upon the attempts of Navahoe to win this trophy fifteen years or so ago. She raced against the Prince of Wales' cutter Britannia and, as every one knows, the British single-sticker won three victories in hollow style.

It is safe to say that the determination of an American to go after this gold prize would cause enthusiasm no less than that which would attend the report that a British yachtsman was coming over here after America's Cup. There was a time, indeed when the Royal Victoria Cup was hailed as a counter attraction to the famous trophy held by the New York Yacht Club; but the lack of inclination on the part of Americans to so consider it caused decline and gradual death of all interest on both sides of the water.



ASPIRANT, THE 40-FOOT SLOOP WHICH HAS BEEN PURCHASED BY A CHICAGO YACHTSMAN. SHE WILL ENTER THE MACKINAC RACE AS A RIVAL TO THE CHAMPION, VANENNA.

Now that it has again come into prominence, chiefly through Sir Thomas Lipton's order from Fife for a 23-metre Shamrock, the English press, with a sneaking desire to enjoy a repetition of Navahoe's humiliation, has been urging American yachtsmen to come over and try their luck. Members of other clubs, who have been criticizing the New York Yacht Club, could gain for themselves all sorts of international fame by sending a boat to the Solent, and if, peradventure, they won the cup it would be within the bounds of reason to suppose that Englishmen would be over here the year after, trying to take it back. Then, indeed, would a rival for the America's Cup be found.

The cutters at present engaged to race for the Victoria Gold Trophy, in addition to Shamrock IV., which is of Fife design, are Sir James Prender's Brynhilde and Myles Kennedy's White Heather II. They are in length 75.4 feet, 22 feet beam and carry about 10,000 square feet of canvas.

So they are going to turn Rainbow, Commodore Cornelius Vanderbilt's old seventy-foot sloop, into a schooner. As will be remembered, she was turned over to the Herreshoffs in part payment for the 57-foot sloop Aurora. She should make a good racing schooner, outclassing anything that rates near her in most convincing fashion. As a cruiser she would have structural limitations which certainly should militate against her purchase by any discerning non-racing yachtsman.

In the early days of the seventy-footers, Rainbow did not enjoy all the success as a cup winner which came to her later. In their first season Sir Thomas Lipton offered a cup for them and the race was sailed off Sandy Hook. Rainbow was far behind her four competitors when a sudden shift of wind put her so far to the windward of the others that she sailed home a winner by half an hour.

The sixty-foot sloop, Irolita, is now being made into a schooner. As such, Commodore E. Walter Clark hopes to have a mighty able boat. Whether he will or not is a question. As a sloop she was successful neither as a racer nor a cruiser. In regattas she was a laggard from start to finish. There seemed no conditions in which she was able to keep up with the leaders, to say nothing of being a leader herself. The desire to make a combination racing and cruising craft resulted in a hybrid creation and poor at that.

A report from Bristol says that work at the plant of the Herreshoff Manufacturing Company at Bristol is at a standstill, and that unless orders for new yachts are received within the next three weeks, all the help, with the exception of a small repairing staff, will be discharged.

The most curious feature of the present situation is the rush of applications for purchases which floods the offices of the yacht brokers in this city at the present time. But there are few if any yachts being sold, for the very good reason that the inundation of would-be buyers is purely a rush of bargain seekers. They are not willing to pay even a fair price for yachts. The main idea is to secure something for nothing, and things have got to such a pass that it is nothing unusual for a man to enter a broker's office offering $2,000 for a yacht which is cheap at $8,000. However, yachtsmen have not yet arrived at a stage where they must sell something for nothing.

A MODERATE-SIZED RAISED-DECK CRUISER. THIS IS A TYPE OF CRAFT PARTICULARLY ADAPTED TO THE INSTALLATION OF A SMALL ACETYLENE OR ELECTRIC LIGHTING PLANT.

The Installation of Lighting Plants

VARIOUS SYSTEMS AND DEVICES BY WHICH THE YACHTSMAN AND MOTOR BOAT OWNER MAY ILLUMINATE HIS CRAFT — THE AVERAGE BOAT OWNER HAS NO IDEA AS TO THE MODERATE OUTLAY REQUIRED FOR AN ELECTRIC OR GAS LIGHTING PLANT

By E. T. KEYSER

Illustrations by courtesy of the Commercial Acetylene Company and the Twentieth Century Manufacturing Company

THE SAFETY STORAGE ACETYLENE SYSTEM.

As a rule, the ordinary kerosene yacht lamp is the boat's lighting equipment, because the owner does not realize at what a comparatively moderate expenditure an electric or a gas lighting plant may be installed.

The possessor of a moderate-sized craft is very apt to figure out that it is all right for the big fellows, but that the cost and the weight of the apparatus will be out of proportion to his boat.

This is a fallacy, for gas or electric generating sets may be obtained in sizes which make them suitable for any size of boat.

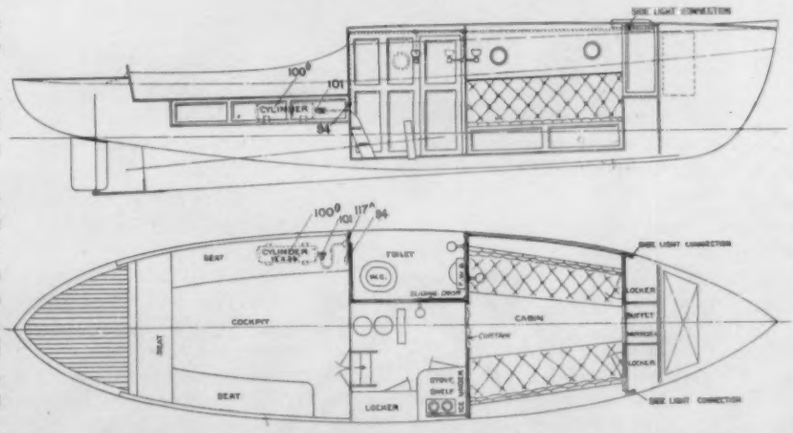
When it comes to the choice between acetylene gas or electricity, the owner must judge for himself. Each has its advantages and some special points to recommend it in particular cases.

There are two acetylene gas systems at the disposal of the owner. In one of these, carbide is purchased and the gas generated on the boat. In the other, tanks filled with gas are purchased, and exchanged when empty for full ones.

The first cost includes the price of the tank plus that of its contents. After that the expenditure for maintenance consists simply of the cost of the gas. The storage system consists of the supply tank already mentioned, a regulating valve that keeps the pressure constant, a gauge showing the amount of gas remaining in the tank, piping, preferably of ⅛-inch galvanized iron, and a sufficient number of acetylene burners for the several lights.

The tank itself is a very interesting and ingenious affair. If gas alone were simply pumped into an ordinary tank at high pressure there would be danger of its exploding under the tremendous amount of pressure to which it would be subjected should the temperature suddenly become raised. Moreover, with free gas there would, in case of a fire on board the craft, be as much danger from the cylinder as from a keg of powder.

To make the tank absolutely safe, it is packed with asbestos disks. The asbestos is saturated with acetone, which, at normal temperature, will, under 150 lbs. pressure, absorb 25 times its own volume of the gas, increasing by ten times the storage capacity of the tank. Immediately this pressure is unbalanced by the turning on of the supply valve, the gas is released from the asbestos. The great affinity which acetone has

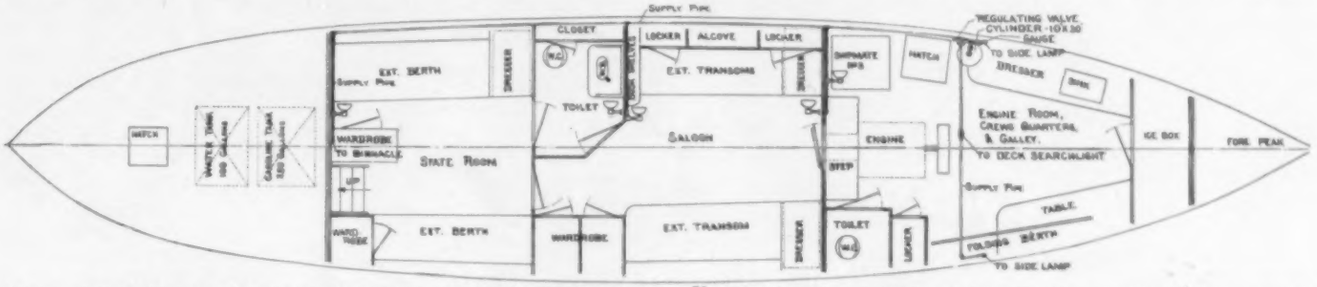


INSTALLATION PLAN OF A SAFETY STORAGE ACETYLENE LIGHTING SYSTEM ON A 32-FOOT RAISED-DECK CRUISER. THE STORAGE CYLINDER STOWS UNDER THE PORT COCKPIT SEAT. THE DIAGRAM ILLUSTRATES HOW THE LIGHTING AND COOKING OF A SINGLE-HANDED CRUISER MAY BE ACCOMPLISHED WITH ECONOMY OF SPACE AND WEIGHT.

for the acetylene renders it possible to store a comparatively large quantity of gas at a very low pressure. These tanks are made in the following sizes, suitable for use aboard a yacht:

10	inches by	30	inches with a capacity of	125	cubic feet
12	"	36	" "	225	"
14	"	48	" "	400	"
16	"	48	" "	500	"
16	"	54	" "	600	"

The layout of Plan No. 1 illustrates the installation of the storage system in a 32-foot raised deck boat, designed by Whittelsey & Whitaker, Inc., as a cruiser and summer home for two persons. Under the port seat in the cockpit is a storage cylinder of 12 x 36 inches, with a capacity of 225 cubic feet of gas. No. 100 is the storage tank. No. 101 is the stud valve on the storage cylinder, which is open after connecting it up with the joint on the supply pipe. No. 117 A is the regulating valve for keeping the pressure constant at the burner, even though the internal pressure of the cylinder may vary. No. 94 is the pressure gauge, which at a glance indicates the amount of gas remaining in the tank; it is well to keep an eye on this.



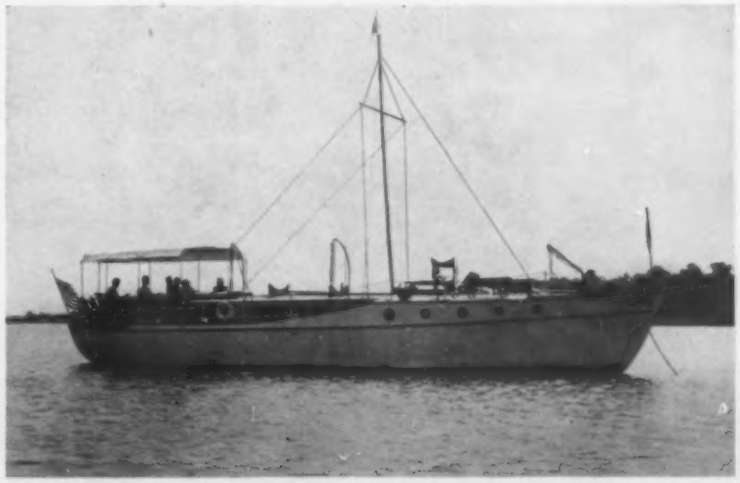
LAYOUT OF INSTALLATION PLAN OF STORAGE SYSTEM OF ACETYLENE LIGHTING ON 50-FOOT GASOLENE CRUISER, LA VEDETTE. IN ADDITION TO FIVE BURNERS IN THE CABIN, THE ACETYLENE SUPPLIES BINNACLE AND SIDE LIGHTS AS INDICATED.

When at a normal temperature the gauge reads 150, the tank is full. When it gets down to 0 lbs. the supply is exhausted. The attention limit should be placed at 10 lbs. (dependent, of course, upon distance to supply station), and when the indicator needle reaches this point it is time to send for a new tank.

There are three compartments in the cruiser. The toilet room is lighted by a ¼-foot burner of 12½ candle power, and on the bulkhead separating this from the engine room is a half-foot burner of 25 candle power, placed in such a position that the engine is fully illuminated, while there is always a sufficient amount of light at stove and refrigerator.

The cabin is lighted by another half-foot burner on the port side. Each side light has an eighth-foot burner. As will be seen by a study of the plan, the cylinder, regulating valve and pressure gauge are all out of the way, yet instantly accessible. The high pressure piping—about the size of a lead pencil—is formed into an S between the tank and the regulating valve connection. This is to allow play of the cylinder, without danger of breaking the pipe at the connection. Passing up the after bulkhead, the pipe rises to the roof of the bathroom. It runs along the after bulkhead, turns an angle along the bulkhead separating this room from the engine room, whence a drop connection on the outside of the bulkhead connects with the engine room light. Thus the pipe passes the partition between the cabin and the engine room. Then it divides into two lines, one running to starboard and supplying the two-burner acetylene stove, the other to port and supplying the cabin and bathroom lights; thence it makes a right angle and runs forward to the port side light. Just before reaching it there is a T joint, from which runs another length supplying the starboard side light. The pipe is of such small diameter that it is easily concealed in the moulding of the cabin woodwork, and it is carried high enough to clear doors and curtain rods.

The two-burner stove illustrated is 6½ inches high, 21 inches long by 11½ inches wide. Its consumption of gas is 2¾ feet per hour per burner. With such a plant, burning all lights one and one-half hours per day (which has been found a fair average) and a use of the stove one hour per day, there is a consumption of about 32¼ cubic feet of gas per week. At that rate, a tank will last 28 days.



THE 50-FOOT CRUISER, LA VEDETTE, PLANS OF WHOSE LIGHTING AND COOKING SYSTEMS APPEAR ABOVE.

The second illustration shows how the 50-foot cruiser, La Vedette, was equipped with an acetylene storage system of lighting. In the forecastle, on the port side, a 10 x 30-inch cylinder with a capacity of 125 cubic feet, was installed, and connected with the five acetylene gas burners shown in the plan. These are all of one-half foot consumption, with the exception of the toilet light, which is one-quarter foot. In addition to these lights, the boat has on deck three one-eighth foot burners for the side lights and the binnacle, and also a searchlight mounted forward with a one-half foot burner. During the last season La Vedette was supplied with three tanks in five months.

A peculiarity of acetylene is the fact that when burning as an illuminant very little heat is thrown off from the jet. This is when the gas is used in its pure state direct from the tank or generator.

When used in connection with the Bunsen type of burner for cooking, stoves especially constructed for the purpose will do the work and do it quickly.

ACETYLENE GENERATING SYSTEM.

In the generating system of acetylene lighting the carbide is fed inside the generator into water in the base, automatically in greater or less quantity as the consumption of gas renders necessary. In the generator illustrated herewith the dimensions are as follows: Diameter, seven inches; height, twenty-nine inches; carbide capacity, fifteen pounds. The generator itself weighs seventy pounds. As shown in the cross section of diagram herewith, it is set as near the center of the boat as possible and so low that only one-third of the height of the generator is above the water line. By this means, the water in which the craft floats furnishes the pressure required. The water enters the pipe set through the planking alongside the keel and goes through the right angle joint into the lower part of the generator cylinder A. Here it comes in contact with the carbide dropped from the upper part of the cylinder and temporarily resting on a grating. Thence the gas generated rises through the pipe C and passes through the regulator B, which may be placed anywhere between the generator and the first jet. By means of this regulator, no matter how many lights are burning, the pressure is always the same. Then the gas is distributed through the supply pipe C to the various lights and also to the stove. The large pipe connecting C with the outboard pipe is for safety, so that if by accident too much gas should be generated it will blow off through this passageway.

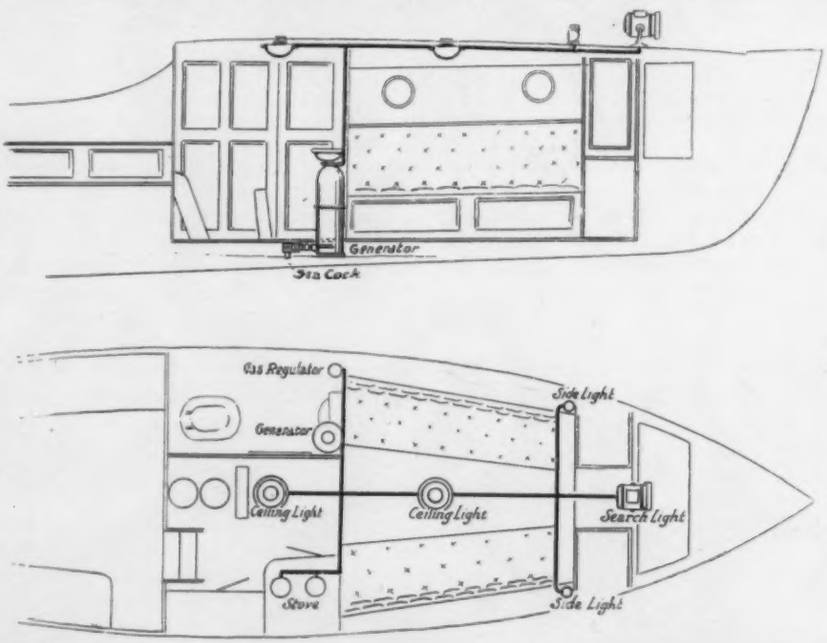
The connection between the safety and the gas supply pipe being above the water line there is no danger of flooding.

The waste product passes out through the same pipe by which the water enters and at the same time that the gas rises to the supply pipe.

To facilitate the outboard flow of the waste, a diagonal bottom, with its lowest point as a supply valve, is a part of the generating cylinder A.

When it is desired to replace a new charge of carbide or when it becomes desirable for any reason to inspect the interior of the generator, the sea cock is closed by means of the lever shown in the cross section view. When the sea cock is closed, this lever stands vertical. In this position the chain is slackened sufficiently to allow the circular cap which prevents access to the generator head plug to be shifted to one side. Then the valve in the drain faucet shown on the right hand side of the generator is opened and the water in the generator passed off into any convenient receptacle. Then, the plug in the cap is removed and the new charge may be put in.

The ingenuity of this arrangement will be readily appreciated. When the sea cock is open the plug in the cylinder head cannot be removed, because the lowering of the gate valve handle pulls back the protector cap to the plug in place. The drainage faucet cannot remain open because in pulling back the protector cap the faucet is shut off. It is almost absolutely as close to being fool-proof as any piece of mechanism that could be produced. A generator of this pattern will work equally well with either fresh or salt water.



INSTALLATION DIAGRAM OF AN ACETYLENE GENERATING SET ON BOARD A 32-FOOT RAISED-DECK CRUISER. THERE IS A HALF-FOOT BURNER IN TOILET AND CEILING LIGHTS OF TWO HALF-FOOT BURNERS EACH IN CABIN AND ENGINE-ROOM. (THESE SAILING LIGHTS ARE ENTIRELY INSULATED FROM THE INTERIOR, BEING LIGHTED FROM OUTSIDE.) CONNECTIONS ARE ALSO MADE TO SEARCHLIGHT AND PORT AND STARBOARD SAILING LIGHTS.

Illustration No. 4 shows accommodation and vertical plans of a 32-foot cruiser as arranged for a generating plant with a generator 7 x 29, and a gas regulator. From the regulator the piping is led across the roof to an acetylene stove on the starboard side. The engine room and galley are illuminated by a ceiling light with two burners of ¼-foot consumption each, the cluster having a total of 25 candlepower. A "T" joint and a pipe connecting with the stove supply gives gas to the galley light and also to a duplicate of it in the cabin. A peculiar feature of these two lights is that they are set through the roof of the cabin trunk with an air-tight glass bowl underneath and a metal ventilating hood above. These lights draw their air supply from and pass off their surplus heat into the outer air, so that there is no exposed flame in either cabin or engine room. From the main cabin ceiling light, a supply pipe runs at right angles to a thwart ship supply pipe carrying gas to the port and starboard side lights. All the piping is of ⅜ inch and the generator will, on a supply of 15 pounds of carbide, give a supply for eight to ten days' cruising on a basis of an hour and a half per day burning of each light and one hour's use of the two-burner stove. The generator was placed in the position indicated so that the intake would be always below water line.

ELECTRIC LIGHTING SYSTEM.

There are two general systems of electric lighting plants suitable for yachts and power boats. First, a dynamo, belted direct to the engine, connected with a storage battery from which the lights receive their supply of current; second, an independent generating set, in which a separate engine is used to operate the dynamo. The latter is for the larger type of craft and for sailing vessels and should also have a storage battery as part of its equipment.

The first plant is the most economical in installation and operation. The storage battery is what makes it possible to store up current, as water is stored in a tank, to be drawn off as needed, even when the engine is not running.

And even when the engine is running there are times when it may be desirable to have extra lights on, and consequently to use more current than the dynamo is producing. In that case the illumination would be poor without a reserve upon which to draw. As a general thing, it may therefore be taken for granted that the average power boat requires an outfit consisting of a dynamo attached to the fly-wheel by a belt, a storage battery, with more or less cells, according to the number of lights, and their size. In addition to this, a switch board for governing the

current and a charging switch which automatically takes the current on or off from the storage battery as the latter becomes exhausted or receives its full capacity of current. As a rule, a voltage lower than twenty is not practical, because what one gains in the cost of operating plant is lost in the cost and care of renewal of lamps.

Lamps, called in the trade "high efficiency lamps," are made to take low voltages, but they are, of necessity, so delicately constructed and the filaments become burned out so easily and so quickly, that the cost and the trouble of replacing them more than offsets the lower cost of the smaller equipment necessary to run them. In the installation, the motor should be placed as distant from the fly-wheel as possible, as the longer, within reasonable limits, the belt connecting the two, the better. The regulating switch can be placed anywhere, preferably in the engine room, and the storage battery may be underneath the seats, where it is out of the way. One of the smallest generating sets for electric illumination and sparking consists of a generator weighing 45 pounds and measuring 12 x 10½ inches, and a storage battery of four cells with a capacity of 40 ampere hours without recharging. Such a storage battery would measure 11 x 12 x 13 inches and would weigh 68 pounds. An outfit such as this will allow of the use of four incandescent six-candlepower lamps, all burning eight hours on each charging of a storage battery. This, in a small cruiser, would allow of a light in the cabin, one in the engine room, one in toilet, one on a loose wire for inspecting motor, and two sailing lights, each of four candlepower. Or, he might utilize one of them as an incandescent searchlight, which will throw a beam two hundred feet ahead. Such a generation outfit would give a current of eight volts and, as stated, be suitable for the very small boats on short runs. Such an outfit, ready to instal, but with the exception of the searchlight, would cost something less than $175.

ACETYLENE GENERATOR, PRESSURE EQUALIZER, PIPING AND STOVE CONNECTIONS. THE WATER SUPPLY VALVE IS SHOWN OPEN. NOTE THE DRAINAGE PLUG AT EXTREME LEFT OF INLET PIPE. THIS PLUG ALLOWS THE DRAINAGE OF ALL WATER WHEN LAYING UP FOR THE WINTER.

The sailing port and starboard lights are in a power boat furnished with current from dynamo, and do not draw down battery reserve, as they are used only when motor is running.

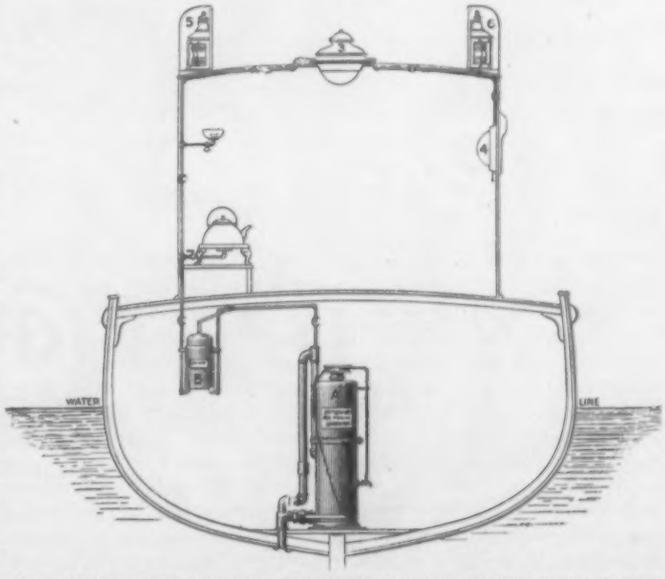
A far more satisfactory equipment, however, and one splendidly adapted to a cruiser, up to and including a 40-foot craft, would be a 20-volt outfit, capable of giving eight hours' light with five six-candlepower lamps all going at once. This would give the owner three lights for the cabin, one for toilet, one for the engine room, a port and starboard sailing light, and an incandescent searchlight.

As it would be extremely unlikely that all of his lights would be going at once, a couple of extra sockets could be placed and wired up, and even if they were all running, the diminution of the length of lighting on each charge of the storage can be figured on the basis of full capacity at 40-ampere hours. That is to say, 30 candlepower of light will run consecutively for eight hours on each charge, or 40 candlepower will run six hours. An outfit of this kind consists of a generator, the same size as that of the plant described above, but of a ten-cell storage battery, weighing 170 pounds, and divided for convenience into two parts, each requiring 10⅜ x 13½ x 12½ inches stowage room. The generator would not take more than one-sixth of one horsepower from the engine when charging and would reduce the speed of engine by but one or two revolutions per minute.

When it is desired to instal an arc searchlight, provision must be made for a much heavier drain on the current supply. This is best provided for by a dynamo of sufficient capacity to operate the searchlight, even when slowed down to half speed, and with an automatic switch, so that when the speed drops below this the storage battery is put in on to the line to make up for the deficiency in the generator. A larger-sized storage battery is an absolute necessity in such a case, for not only must it have capacity sufficient to take care of the searchlight at very low speed, but to run the interior and sailing lights while the search beam is taking its current direct from the dynamo. An outfit sufficiently large to do this would consist of 35 cells, weighing 170 pounds, a generator weighing 600 pounds and occupying 14½ x 17½ x 15 inches space. This has a capacity beside the searchlight of sixteen six-candlepower lights, burning consecutively for eight hours without recharging. Including switchboard and fixtures, it would cost in the neighborhood of $550. A searchlight capable of showing objects a half-mile or, under favorable conditions, one mile distant would cost from $125 to $160 more, according to finish and style of mounting. One less powerful, fitted with a reflector instead of a mirror, would range in price from $90 to $125.

The storage battery is really what makes the small-sized outfit practical and the auxiliary to the storage battery, which endows it with almost human intelligence, is the automatic charging switch, which acts the same as the floating ball valve on the inlet of a water tank. As soon as the voltage of the generator drops, the automatic switch throws the generator out of contact with the storage battery.

Another very important part of the outfit is the switchboard. With this before him the skipper always knows just what the plant is doing. Telltale lights are so arranged that, should one of the sailing lights go out, the fact would be indicated immediately. By means of his voltmeter and ammeter he knows instantly just what current he is getting and the tension of it.



SECTIONAL VIEW OF ACETYLENE GENERATING SYSTEM, SHOWING INSTALLATION OF GENERATOR TWO-THIRDS BELOW WATER LINE, ALSO PRESSURE EQUALIZER AND CONNECTIONS TO STOVE AND LIGHTS.

Auxiliary Installation

HINTS FOR THOSE WHO DESIRE TO PLACE A GASOLENE ENGINE IN A SAILING CRAFT

By PHILLIP J. OVERMAN

Installation plans by courtesy of the New York Yacht, Launch and Engine Company and Buffalo Gasolene Motor Company

THE greatest drawback to the thorough enjoyment of a week-end day and a half's sailing cruise is the harrowing doubt as to whether the cruiser will be able to make the anchorage in time for the Monday morning grind.

To the "must get back" men, even though they enjoy sailing for sailing's sake and care nothing about power craft, the gasolene motor is a godsend.

The installation of a "kicker" in a sail-boat is not necessarily an expensive piece of work, neither need the cost of the motor and appurtenances be heavy.

The first consideration is to get a pretty good idea of where the engine may be placed to most advantage and least discomfort, and then to secure an engine and outfit which will fit best into its surroundings.

Compactness, of course, counts for a great deal in an auxiliary, but it doesn't count for everything by a large number of points, so don't, for the sake of having an engine that is entirely out of the way, get one too small for the work, and while you may not have to use it often, don't efface it so entirely that you can't reach it without carpenter work when something *does* go wrong with its "innards."

Don't go to the other extreme either, and don't get an engine, so large, powerful and complex that it dominates the whole craft and the sails, instead of the motor, become the auxiliary.

There are any number of craft to-day equipped in the latter fashion and "chugging" around with furled sails, no matter whether it blows or not, and which would make considerably better time if they would remove the rigging, which they waste power in pushing against the breeze.

Such skippers would be better off with a motor boat pure and simple. Just make up your mind to the fact that your sailing craft was built to do her work under sail, and that the very lines which tend to make her a good staunch and speedy craft when her lee rail is under are dead against her proving a racer when she is going under power, on an even keel.

What you need is an outfit that will push her from six to six miles and a half in a calm, and which is not to be used when there is enough wind to make work under canvas possible.

If she is a shoal draught craft, with a broad, flat flow aft and plenty of deadwood in the skeg, your tack will be comparatively easy, for you will have room to cut away the deadwood to accommodate the propeller, and there will be room to set the engine underneath the cockpit flooring, with the balance wheel just projecting into the cabin.

If she is deep and narrow at the stern, there may be so little beam under the cockpit floor that the motor must be set further forward and be entirely exposed in the cabin.

The modern self-bailing cockpit, with floor above the water line, offers an ideal place for installing the engine directly under the bridge step which lies between the cabin trunk and the cockpit proper, and a pair of small gasolene tanks can be placed under the after deck, one on each side of the rudder post.

To secure a speed of 6½ to 7 miles, a 20-foot cat should be equipped with a 6 to 7½ horsepower engine, a 25-foot sloop or yawl, one of 7½ horsepower, and a 30-footer, a 7½ to 10 horsepower, and a 35-foot craft with an engine of 10 to 15 horsepower. These horsepowers are roughly approximate, as the speed would vary according to the lines of the craft.

Wherever possible, make up your mind as to where you want the engine located, then send a tracing or blue print of the construction plan of your craft to the engine builder and let him furnish you with the layout and specification of the bedding.

The motor manufacturer is in a better position than anyone else to do the work for you, and it's as much to his interest as your own to have that engine work properly.

The proper alignment of the shaft is of the utmost importance, and after you have got this as perfectly as possible, leave the motor so that it may be finally adjusted after the craft is overboard.

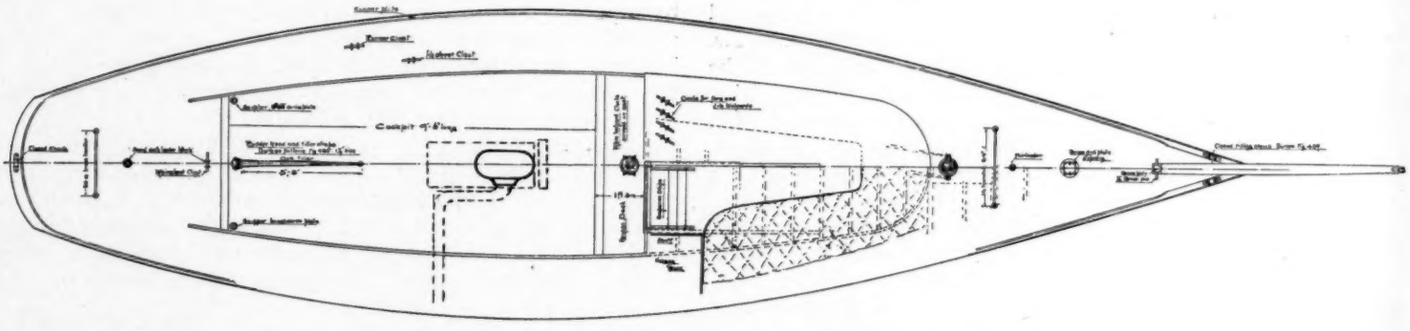


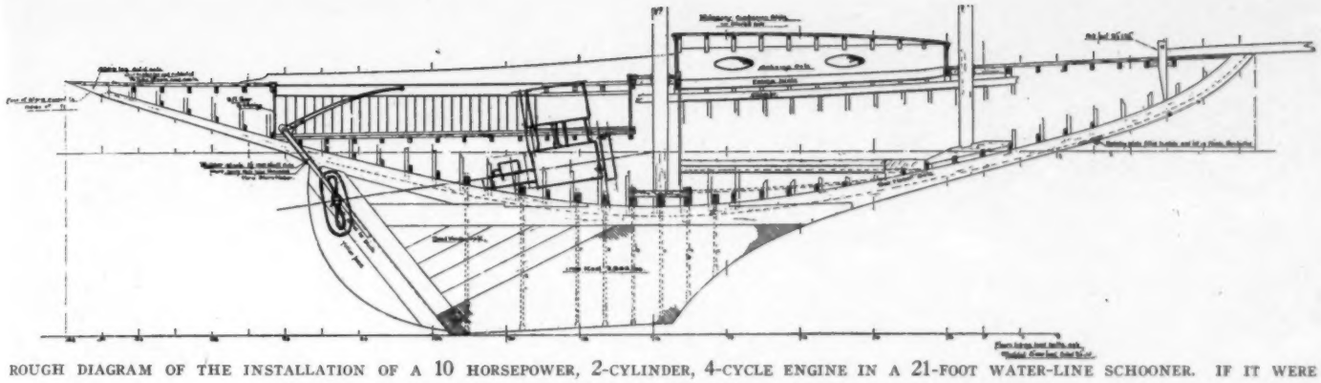
DIAGRAM SHOWING THE AMOUNT OF SPACE WHICH WOULD BE OCCUPIED BY 10 H.P. MOTOR, WHICH MAY BE COVERED IN BY A REMOVABLE CASING.

The difference between the strain on a hull when shoved up on land and when supported by a cushion of water alters her shape to a noticeable degree, and a shaft which is fairly well in line when on the ways, very often goes off more or less after launching.

Choose a slow-moving engine. It will take considerably more power to push your sailing craft through the water than you may possibly imagine, and you are not in the speed boat class any way. Have your fittings as simple and accessible as possible. If your craft is of moderate size, use dry batteries in preference to a magneto or sparking dynamo.

You are not going to run your engine as many hours per trip as a power boat engine runs, and the dry batteries will be cheaper, lighter and occupy less space. The weight of engine, shaft and appurtenances will weigh enough as it is to render it necessary to rearrange the ballast to prevent too much alteration of your boat's trim.

For auxiliary use the propeller should be two-bladed. This will run with more vibration than one of three blades, but it



ROUGH DIAGRAM OF THE INSTALLATION OF A 10 HORSEPOWER, 2-CYLINDER, 4-CYCLE ENGINE IN A 21-FOOT WATER-LINE SCHOONER. IF IT WERE NOT FOR THE MAINMAST, THE ENGINE COULD HAVE BEEN LOCATED FURTHER FORWARD.

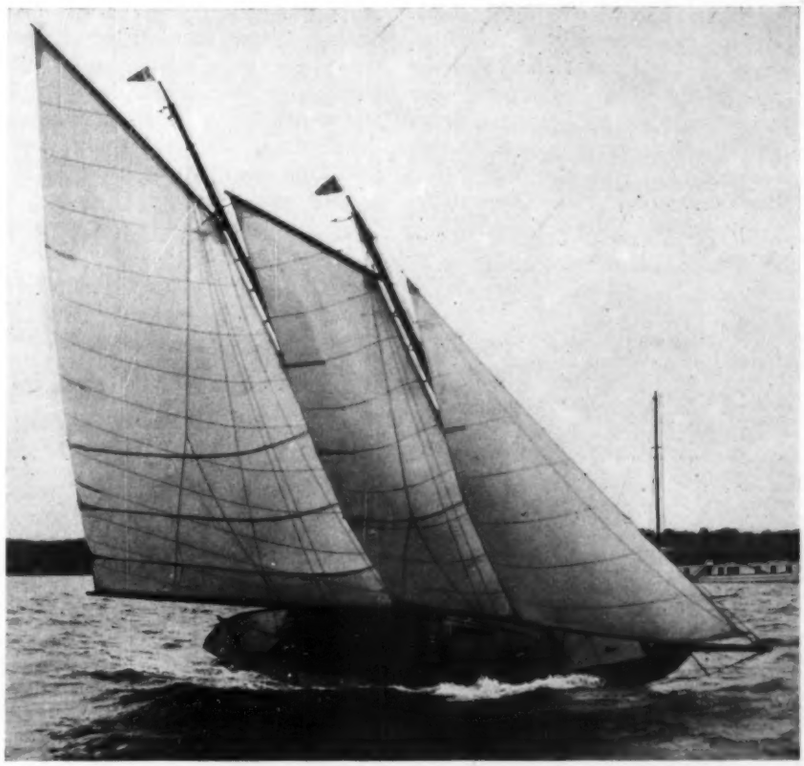
can be housed behind the skeg and entirely protected when the blades are set vertically. When in this position there will be very little "drag" while the craft is under sail.

Either a reversible engine or a reversing propeller may be used. The former does away with the added complication which any extra mechanism means in an auxiliary outfit, but the latter allows the propeller blades being set at neutral when not in use, thereby reducing the "drag" to the smallest possible fraction.

In order to be able to set the propeller blades vertically when at rest, the fly-wheel should be marked at its lowest or highest point when the blades are in the vertical position. Thereafter this mark will serve as a guide.

Some of the modern deep-draught keel craft, with long overhanging stern, are sometimes apt to present something of a puzzle as to the right place to locate the engine where its shaft will be sufficiently horizontal to allow of the propeller doing its best work and yet allow of enough room for the motor to be quite accessible.

The reproduction of the plans of a schooner, 33 feet over all, shows how what at first glance would appear to be an insurmountable obstacle was conquered. The problem was to install a 10 horsepower two-cylinder Twentieth Century engine in the cockpit as far forward and as low down as possible. The mainmast effectually bars the placing of the engine under the bridge deck, which would have allowed the placing of the propeller wheel further below the water line and have kept the engine itself out of the cockpit.



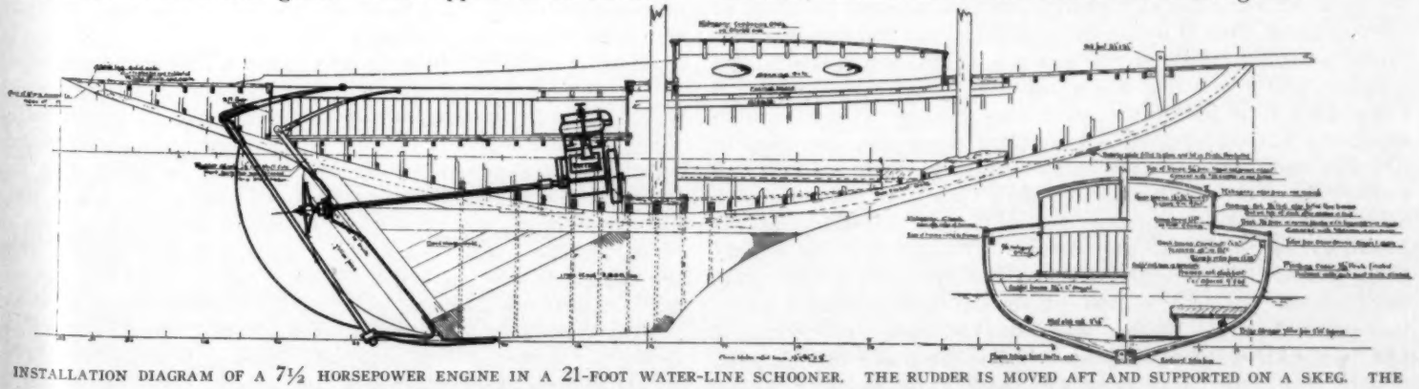
A 21-FOOT WATER-LINE SCHOONER, THE SIZE AND TYPE OF CRAFT WHOSE ENGINE INSTALLATION IS SHOWN BELOW.

The motor is therefore just aft of the mast, with enough space between mast and fly-wheel to allow the turning over of the motor in starting.

The exhaust is water-jacketed and passes out at the starboard side just under the deck, without expansion chamber or muffler.

The top of propeller wheel is submerged nine inches when the boat is at rest, and as she will settle somewhat at the stern when under power, the amount of submergence will be increased.

The diagram given at the foot of the page shows the plan of installation recommended for a 7½ horsepower engine in the same craft. In this case the rudder is moved aft bodily and supported on a metal skeg, the engine is a trifle further forward, and the wheel has a trifle more submergence.



INSTALLATION DIAGRAM OF A 7½ HORSEPOWER ENGINE IN A 21-FOOT WATER-LINE SCHOONER. THE RUDDER IS MOVED AFT AND SUPPORTED ON A SKEG. THE ENGINE IS DIRECTLY CONNECTED TO THE SHAFT AND TWO-BLADED SOLID PROP ELLER WHEEL.

The Rescue

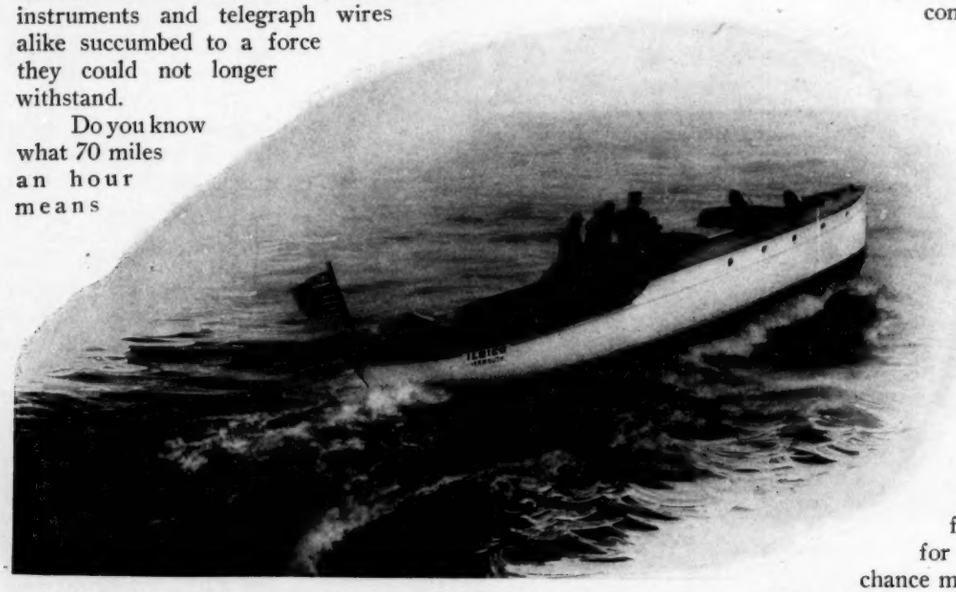
A STORY OF THE SAVING OF THE CREW OF THE SCHOONER CHARLOTTE T. SIBLEY BY THE MOTOR BOAT ILDICO IN A CAPE COD GALE

By C. H. CLAUDY

ON OCTOBER 7, 1907, there started what proved to be the worst gale which had swept the storm-beaten shores of Cape Cod since the year 1879. The daily papers on the eighth and ninth, and even later, were full of tales of vessels lost at sea, of waves and wind too high to allow the plucky and able life-saving crews of the Cape Cod life-saving stations to render aid to vessels and mariners in distress, and of many, both vessels and the men who manned them, who trod the Great Wet Road upon which Davy Jones keeps the toll gate, and which every mariner must walk, be it soon or late, so be it only that he live long enough and go often enough down to the sea in ships.

It is necessary for the tale to be told to have its full effect that there be no doubt of the state of the elements. It was blowing more than half a gale—more than a whole gale. Forty, fifty, sixty miles an hour—then, mile by mile and hour by hour, the force of the driving air crept up in power—sixty, sixty-two, sixty-five, and then seventy, sure and recorded, and only the Wind God knows how much more, for there were then other things to do than measure wind velocities, and weather instruments and telegraph wires alike succumbed to a force they could not longer withstand.

Do you know what 70 miles an hour means in wind? Do you know how it feels to stand in such a wind, on dry land, let alone the storm-swept deck of a vessel in distress? Do you know what it is like to have the spray and flying spume driven into your flesh until the weather-tanned skin is tender as a woman's and the water drops cut like ice-particles? Do you know what it is to see the giant seas struggle to rise, and to watch the all-powerful wind beat them down and cut them in two and tear their tops off and throw them away so fast and so hard that the eye can scarcely follow them, and brow-beat and battle down and exterminate the most powerful thing in the world, except the wind—the waves of Old Ocean in his might? Do you know all this and all that the feeble and inadequate words stand for? For if you do, you can realize what a forty-foot motor boat had to face when she turned life-saver, and, if you do not know, then no words of mine can make you see what a dare-devil thing was done and how a man's faith in his work and his knowledge and his seamanship were justified. On the eighth of October the wind was sweeping the entire northern part of the country—this was no local Cape Cod wind, but a blistering southeaster, which came howling up the coast from where such storms are born and swept all New England and finally, and only after much damage and death had followed in its wake, disappeared into that other place where spent storms go.



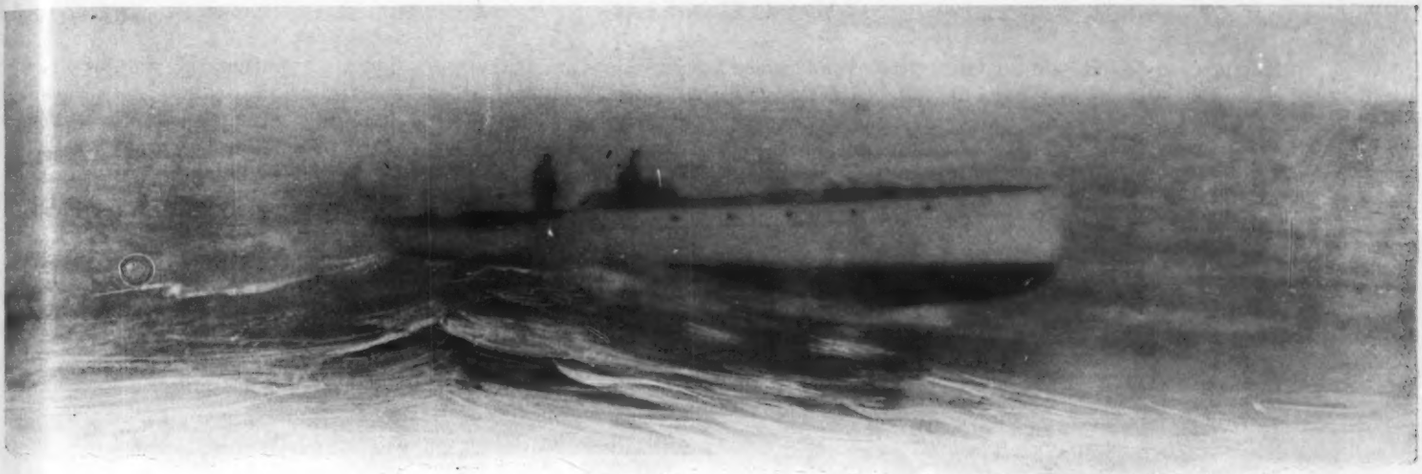
AT THE WHEEL WAS CAPTAIN DAVIS.

On Monday, the seventh, the three-masted schooner Charlotte T. Sibley anchored off the mouth of Bass River, Cape Cod, to ride out the gale. Had her master, Captain Hatch, realized what was before him, it is a question whether he would have anchored there or tried to ride the gale out at sea, hove-to. But this is a story of what is and really happened, not of what might have been and didn't happen. Captain Hatch had two stout anchor holds and sound chains, so on the morning of the eighth the ship was comfortable, although wildly tossed. Captain Hatch said afterward that he had at that time no fear but that he could and would get through all right, although it did not need a trained eye and mind to realize that this was something uncommon in gales. But his placidity was rudely broken. While at breakfast the cook came running to the cabin with the face-blanching news—"The port anchor chain is gone!"

The nautical reader will know what that meant. The non-sea-going reader is informed that when a storm is strong enough to break one of two chains, it is pretty sure to break the one left to do double duty, and when anchored on a lee shore, with nothing between one and eternity but single anchor chains, it may well bring terror to the most courageous man. And terror the announcement brought to captain and crew alike, and every man rushed on deck to see what might be seen and hope for what might be hoped and gauge, each for himself and despairingly, what each one's chance might be should the remaining chain part and let the wind have its will with them and their boat and hurl them shoreward, with an unknown, unguessed velocity, to bring up in splinters on an unknown shore, or, worse, to strike upon an unknown shoal, there to slowly break to pieces and string out the death agony by long anticipation.

As if to tantalize the men, now in peril, the second chain held for a while—held, indeed, until they began to hope that, having withstood two hours of pounding and wrenching, it would outlast the gale. But it was not to be. At ten o'clock it parted with a jerk and a twang hardly to be heard above the gale. The ship at once leaped forward toward the shore and the dimly seen waiting figures upon it, as powerless to aid as they were anxious to render succor. And then it was "every man for himself" from the captain, for none of them knew what the next five minutes might mean—whether she would strike a bar or shoal, or dodge those known to be there—whether she would break up instantly, if she did strike, or hold together—for a little while.

It was not, therefore, with any sense of the unexpected—

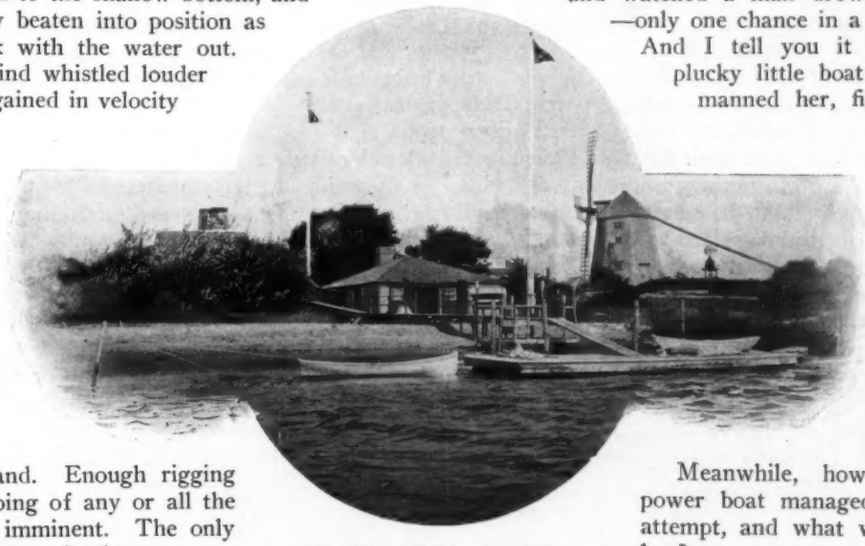


OUTSIDE AT LAST. . . . AT TIMES THE PROPELLER RACED CLEAR; AT OTHERS, THE BOAT SAT ON HER STERN.

rather, with the satisfaction of knowing the worst at once and not being kept in suspense, that it became known that another minute must see the Sibley hard upon a bar—for the shoaling water showed plainly by its color. In another moment she struck. Struck with a jarring blow that sent men flat upon their faces—that tore fixings away and broke rigging and turned an orderly interior into chaos. By some miracle, some unknown balancing of force and force—perhaps some yielding of the sand, enough to break the blow, the masts held, swayed, groaned—and stood.

Five minutes more in the terrific breakers, which even the wind could not lash down to the shallow bottom, and the Sibley was as tightly beaten into position as if she were in dry dock with the water out. And every minute the wind whistled louder and louder and the gale gained in velocity until it was but a piercing scream, filling all space, obliterating all other sound, and singing with the solemn note of a funeral dirge in the ears of those men who counted themselves as already dead.

The keel was ripped from the ship by the impact on the sand. Enough rigging was gone to make the going of any or all the masts problematical and imminent. The only boat the storm had not taken for its own was filled with water and leaking. And had there been a hundred boats, they would never have withstood the half mile of seas between ship and shore, even if they could have been launched.



THE HOME OF ILDICO. SHE LEFT THIS FLOAT TO GO TO THE RESCUE OF THE SCHOONER SIBLEY.

The seas broke completely over the Sibley now, and the captain and crew were forced into the rigging to escape being swept away by the water. In half an hour they were wet and chilled to the bone—and holding on began to be a problem in itself—and each man looked at his fellow with the thought in his eyes, "Will you be the first to go, or will you follow me?" Lash themselves to the mast they dared not, for the masts seemed likely to go at any moment, and to go overboard lashed to a mast is to be drowned like a rat in a cage. The captain knew the nearest life-saving station was at Monomoy Point, and knew that no boat could live in that sea. Yet when the skipper and his men had a sudden flicker of reviving hope it was because they thought that the life savers had, in some mysterious and miraculous way, annihilated distance and brought their craft over land. For there, just coming out of the mouth of the river, was a craft of some sort—tiny in size and flung about by the mighty sets and mightier wind, yet always coming ahead toward the stricken Sibley.

"But I soon saw it could not be a life crew," said Captain Hatch, "for there were but five figures in it. Soon it could plainly be seen to be a power boat of some sort. Then I knew our chances of rescue depended upon some volunteer crew—Massachusetts breeds men, and no Cape Cod man ever stood by and watched a man drown if there was a chance—only one chance in a thousand—of saving him. And I tell you it felt good to watch that plucky little boat and the lion-hearts who manned her, fighting her way where a ship wouldn't dare go—seemingly a toy, a tiny speck, a mere dot upon the water. How she ever held her course and where she got her power to win her tussle with the elements that had proved too much for my three hundred and sixty-ton ship——!"

Meanwhile, how had this venturesome power boat managed to start on her daring attempt, and what was she, and who was in her?

Charles Henry Davis, a summer resident of South Yarmouth, Mass., and a devoted yachtsman, was in his office working—spite of the gale. Word was brought to him that a schooner was on Dog Fish Shoal and likely to break up any minute, and that men could be seen in her rigging.

"That so?" said Mr.—let us say Captain Davis. "Leo, get the men together and get the Ildico ready. With you in a moment." I can easily imagine Davis's stopping to sign a letter or a check while the Ildico, his forty-foot power boat, was being made ready. And I can easily imagine that first mate, Leonidas E. Taylor, and the other men who formed Captain Davis's crew, felt little more excitement than did Captain Davis, for this was not the first time, albeit it was the worst time, that they had rescued those in peril of the sea.

And yet it might easily excite almost any man—to put to sea in a forty-foot power boat against a wind and against waves which, as was afterward ascertained, prevented the Monomoy and Chatham life savers from going to rescue other distressed vessels. And the Ildico, strong and staunch as she is, and distinctly a sea-going boat, was never built with such work in mind.

THE BELL AND LEAD TAKEN FROM THE WRECK OF THE SIBLEY.

However, all this was forgotten in the urgent need of those dimly seen figures clinging to the rigging, half a mile away, and as soon as Ildico could be put in commission—and that meant a very few minutes—she started. At the wheel was Captain Davis. At the engine, Otto Stieffel. Standing by were Mate Leonidas Taylor and Eben Chase, with "Butty" Pierce.

Captain Davis says that there was nothing in the way in which the order was received to indicate that the men would rather have stayed at home. It was all in the day's work.

As the craft put out into the short reach of the Bass River which lies inside the jetties she rose gently and then, settling down, snored away into the baby wavelets in a swift dash for the turbulent sea. Outside, they could see the boiling, gray, riotous expanse of waters. The fierce wind lashed the waves before it, tearing off the tops and hurling them on ahead in cutting spindrift. The air was veiled with it. It was a scene that might well have deterred the owner and crew of a much stouter craft than a forty-foot gasolene boat.

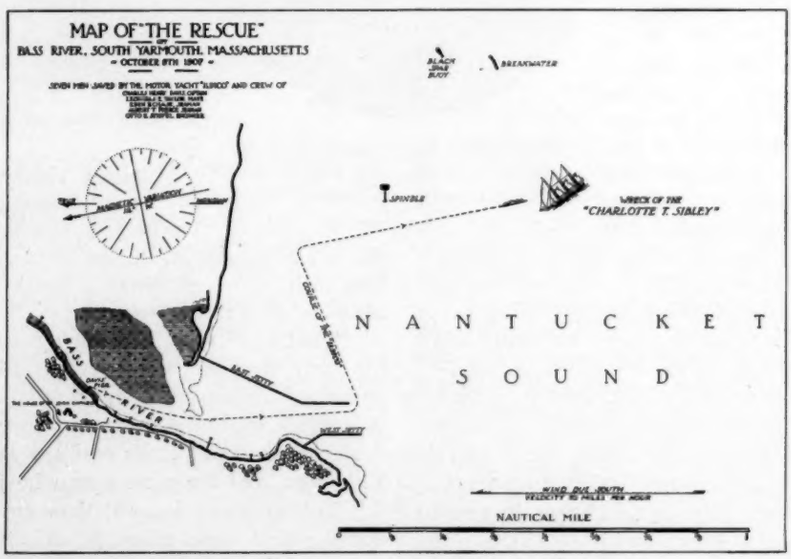
But those on Ildico knew their craft and, better, they knew themselves. The personal equation is an element of no little value in a battle with a raging sea. . . . Outside at last. It was as though, by swift transition, the boat had been hurled into a seething cauldron. The waves came short and high, giving the craft no surcease of buffeting. They smote her bow and quarter, this way and that. At times the propeller raced clear of the water; at others the boat sat on her stern, the gracefully turned bow aiming at the vacant heavens above.

But each time, under the skilful manipulating of Captain Davis, she headed up on her course and bucked into the trip-hammer graybacks as undaunted as those who were aboard her. Half a mile away lay the Sibley, a vague, ragged blur as seen through the flying spray. A scant half-mile! Ordinarily, Ildico, with her 25 horsepower engines, capable of generating a speed of ten knots an hour, week in and week out, would have covered the distance in less time than it takes to write these lines. But conditions were far from ordinary. Sometimes it seemed as though the seas forced Ildico back, forced her to make sternway with propeller revolving at highest speed. This, of course, was not exactly the case, it merely, as has been said, seemed so to men whose every thought was the covering of the distance which lay between them and those in peril aboard the wrecked schooner. Yet, slow as it was, the brave boat was going on indomitably. She literally clawed her way through the smother until, finally, those who were watching the wreck were able to make her out clearly.

The Sibley had struck with her stern partially to the seas, which were raking her fore and aft every minute or so in plunging, rending, grinding floods of clear green water. Above the crash and roar of the breakers could be heard the sharp sound of splintering wood, the dull boom of many a lusty blow upon the sodden hull.

On went Ildico. Captain Davis brought her in so that she headed directly toward the schooner, and then kept her so until it was plain to everyone that any attempt to come up close under the lee of the wreck would only result in the swamping of the little craft and the loss of all on board. No, all that could be done was to keep her away, to keep her head up into the gale and ride it out until some opportunity should present itself whereby the lives of those on board might be saved.

A faint cheer from the huddled figures in the rigging gave notice that the sailors had seen the succoring craft. Captain Davis, with the propeller revolving sufficiently to keep steerage way into the seas, rose, and by signs—the roar of the gale precluded vocal communication—made the shipwrecked men understand that he would stand by. An anchor was lowered over the bow, and there, pitching and reeling, taking everything that came and ready for more, Ildico stood by, splitting the combers on her sharp bow, awaiting her opportunity. It all framed such a picture of sharp contrasts as to impress every one on the power boat, occupied though he was with the grave business in hand. Before them lay the great quivering, reeking hulk, as helpless a prey to the furious waters as the carcass of a dead whale. The might of the tempest reigned supreme. The skies were gray, the clouds seemed fairly to hang about the topmasts of the wreck. The waters battered the schooner, jumped aboard or raced along the deck and poured out astern in torrents, carrying with



CAPTAIN DAVIS'S MAP OF THE SCENE OF ILDICO'S EXPLOIT.

them pieces of cargo, deck furnishings and shattered bits of rail. In the foreground, a small, pretty, white pleasure boat, a mere toy beside the great black hulk, a mere toy in the grasp of the elemental riot.

But she was no toy then. There was nothing of the toy about her. She took the wrack as every brave vessel of whatever size has taken it since man first went to sea. An hour passed. Still the motor boat hung grimly into the seas, and still the waves raced over the schooner, lifting her up, groaning and flailing, letting her down with dull crashing. Suddenly, as though the God of storms had tired of his sport at the expense of a sordid fabric of wood and iron, the wind veered as quickly as a man could turn his hand, to the southward. The seas changed their direction, ceasing to rake the wreck fore and aft and giving those in the rigging their first opportunity to get down to the deck and reach a small boat which had been hauled up against the fore shrouds. Captain Davis was quick to take advantage of the respite. Struggling to his feet in the bow, he motioned to Captain Hatch of the schooner to get his small boat overboard and drift down upon Ildico. Worn with cold and exhaustion, it is probable that the men of the Sibley were in no condition to leave the schooner in a manner which would have admitted greater chance of their getting off in safety.

CREW OF ILDICO. CAPTAIN DAVIS AT RIGHT OF PICTURE.

In any event, as the men of Ildico watched with tense faces they saw the figures of the sailors struggling, groping their way forward. A groan went up from Captain Davis and his band, for it was plain that instead of going over the stern, the natural place for departure under the conditions, the men were going to try to get into their boat from over the bow. The struggle in getting the boat overboard almost ended with the crashing of the frail craft against the sharp cutwater, but finally it was streamed. Then, while those on Ildico stood rigid, waiting for the final act of the tragedy, the act in which was to be read the success or failure of their expedition, the schooner's crew paused while three of their number lowered dunnage into the tossing boat.

At this insane delay the words of those on Ildico, already overwrought, may be left to the imagination, and, indeed, little time was to be lost. The wind was switching about again and the schooner was again writhing in the grasp of venomous waters. Hastily the seven sailors slid down into their boat and cast off. Once, twice, three times they tried to push off from the bow, but the seas held them as in a vice. The fourth time proved successful and the fast-filling craft rolled and plunged on its journey down to the waiting motor boat. Half the time it was invisible to the waiting yachtsmen, as waves intervened, and more than once they never expected to see it again. But up and over flailed the little object, nearer, ever nearer, to those who sought to save.

"Now," cried Captain Davis to Taylor, who stood twirling a line about his head. "Now!"

The line whistled through the air. It fell true, but was missed by the sailor who attempted to catch it.

"Again," cried the captain, as the boat drifted on. She was going to one side of the motor boat, and in a few more moments would be past the rescuers and hopelessly engulfed in the breakers.

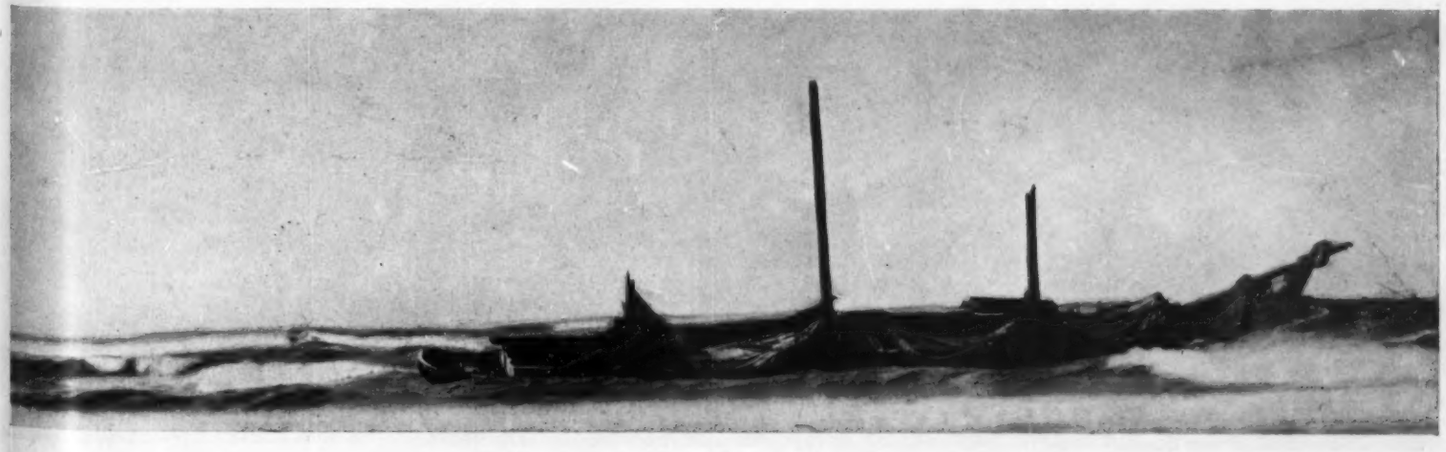
The rope flew once more from the hands of the mate. But again it was missed. A curse shot through the air. Again. This time, too, it was missed. As all hope seemed gone, a sailor in the boat rescued the line with an oar and made it fast to the bow of the helpless boat.

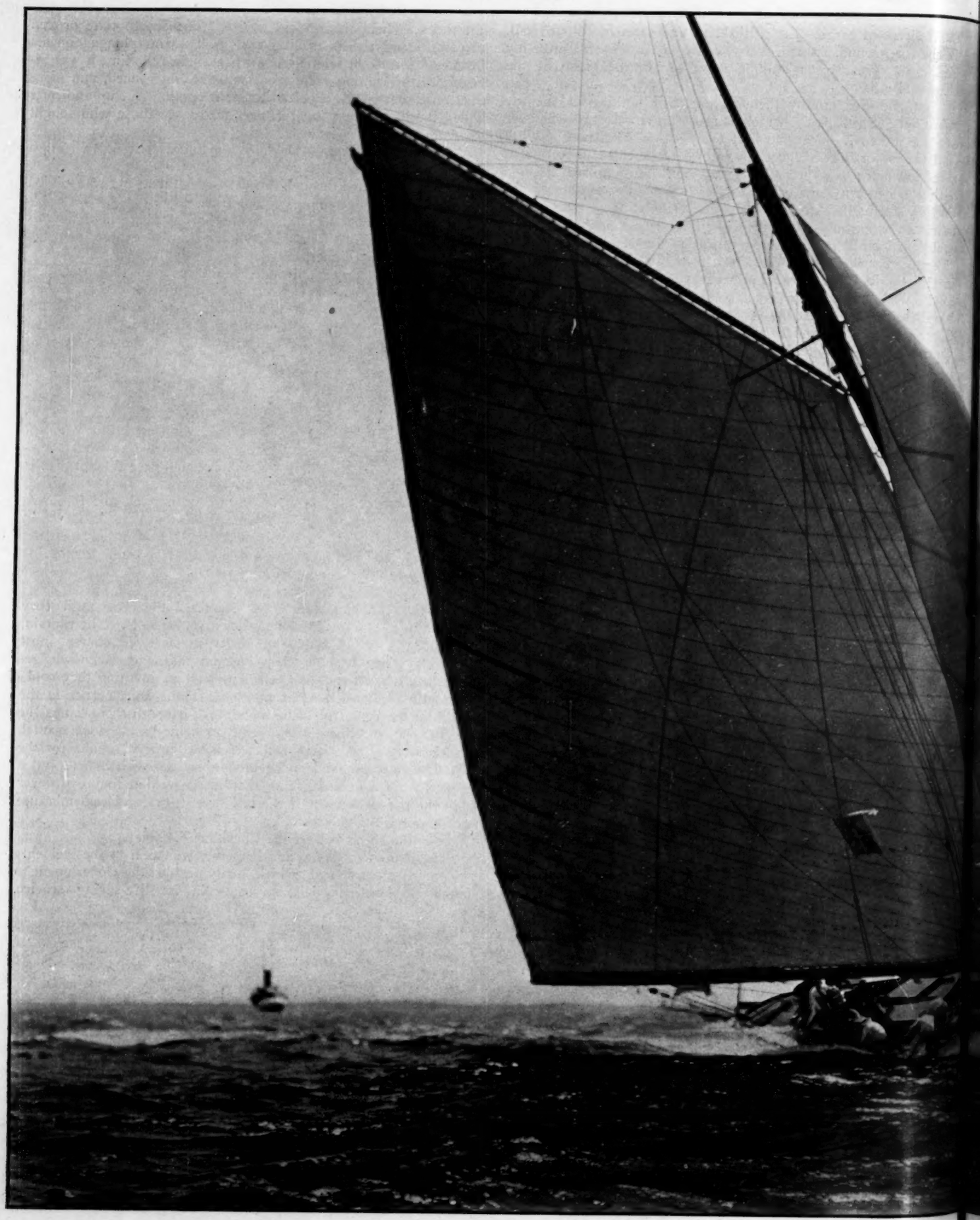
Then, as the seas raged as though in fury at their disappointment, the rowboat was hauled alongside Ildico and man after man transferred until all seven were safely aboard. Captain Davis cut the boat loose, hauled up his anchor, swung around on the seas and fought his way back to port.

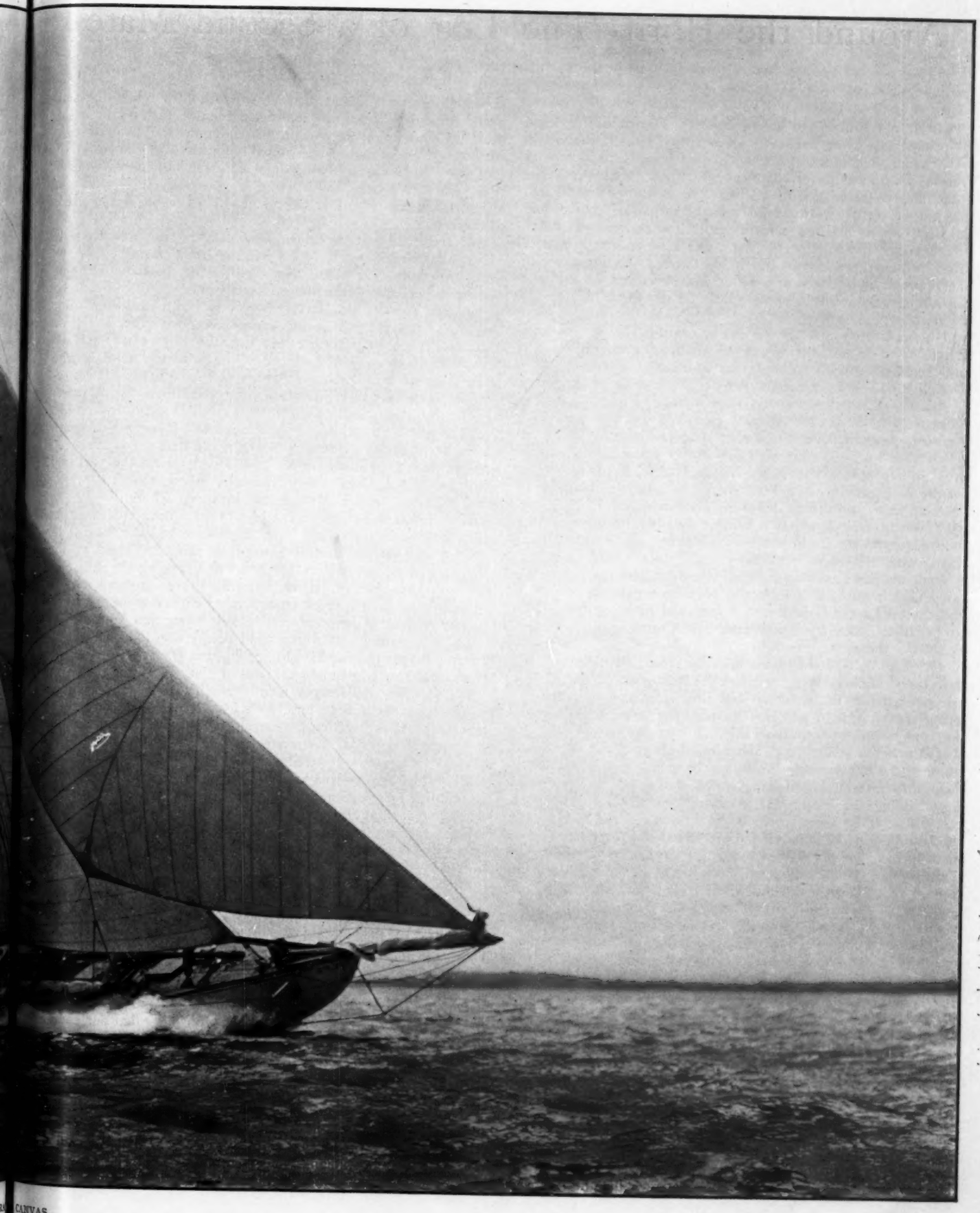
Mr. Davis sheltered the crew until they could make other arrangements. The captain, Hatch, and his crew, were, of course, most grateful. They thought they had no means of acknowledgement, but what Mr. Davis prizes more than anything they could have said or done, is what they gave him. In a corner in the studio of his beautiful home in South Yarmouth there hangs the weight of a lead-line and above it, upon the broad stone mantel, rests a sweet-toned ship's bell, which has rung its chime for the last time over sea and on deck, now retired with honor, and a reminder from a captain and six of a crew that they can never hold the present owner of the bell save in grateful remembrance and admiration.

It is the ship's bell of the Charlotte T. Sibley.

The exploit of Ildico and her crew was akin to the incidents on water, salt and fresh, which finally decided the Government to adopt gasolene-propelled surfboats in its life-saving service.







CANVAS.

Around the Horn—The Log of a Second Mate

By T. JENKINS HAINS

CHAPTER III.—Continued

POOR old Enlis. He was a typical specimen of his kind, now fast dying out. Always believing himself the victim of an adverse fate, growling like a true sailor, and cursing everybody who was unfortunate enough to be under his orders—in his daily condemnation of his luck. Many things that he had told me were true, with a sailor's exaggeration, of course, and the next day, as he drew a hand across his forehead—that had been smashed like an egg, for there was a depression a quarter of an inch deep in the crown of it—and sent a belaying-pin with unerring aim at the back of a sailor with the other, I could not help thinking how much, or how little he should be blamed for his brutality.

His head often hurt him so that he could hardly see, and the captain had a way of singing out, "Ship ahoy!" during his watch, and then look steadily at the blank horizon.

Enlis invariably saw the ship, and could describe its imaginary qualities to the smallest details, often saying: "I guess that's the Babcock," or, "That's the Adams," etc. We never gave the joke away and he must have finally got to believe himself.

October 30th.—We are well over to the eastward and within five hundred miles of the Cape Verde Islands, heading directly for them. Ever since late last night we have been making eleven knots an hour, and this is all we can do comfortably.

Toward 6 o'clock to-day it became squally, blowing from the southwest, and by the time we were through supper the canvas was coming in as fast as all hands could take it. About seven, a squall struck us and burst the mizzen topgallant sail before we could take it in. By nine, it was blowing a gale and we were under reefed topsails and reefed fore and main courses. The sea began to make, and squall after squall came in quick succession from the west.

October 31st.—It has been booming away all night and we have been running, trying to make the best of it. I was almost asleep when I heard a roar like Niagara, accompanied by a splintering crash on deck, and in a moment the water poured down the companionway into the cabin. A sea had struck us just abaft the break in the poop, and coming aft three feet deep had smashed the bitt-coverings and torn the steps on the side of the poop into matchwood, coming down the open companionway and flooding the cabin. After this, sleep was impossible, as every little while a sea would board us and fall on deck with a shock and noise like thunder, and even the double deck beams that the ship has shored up from the cargo are having all the strain that they can stand. About 2 o'clock in the morning I heard the captain yell, "Hard down the wheel. Hard down! Quick, for God's sake!" Half asleep as I was, I knew that something had happened, so I jumped up and, slipping on my clothes, was on deck in an instant. Right in front of us lay a steamer, hove to, and heading the sea with her engines just going fast enough to keep steerage way on her.

If we had kept on a minute longer we would just about brought up, head on, against her broadside, and, large as she was, we would have cut her down and probably gone nearly through her at the rate we were travelling. As it was, seeing that we could not clear her by pulling the ship into the wind, which fortunately stopped our headway, the captain jumped to the wheel and hove it hard up, and we went astern of her. It was a close shave, and it was a particularly bad night for swimming, as the Azores, our nearest land, were about seven hundred miles away.

At three in the morning, a heavy squall came out of the northwest, and we ran before it, heading well to the eastward to avoid the heavy sea. We tore along at a great rate, but the sea came faster and every now and then we would hold our breath, as it would come over amidships, and listen for the crash of the main deck staving down, as we thought it would under the strain of tons and tons of water that roared and surged across it four and five feet deep. The day passed without accident, although it was a trying one. We have blown away a good many sails since we left port, and the loss of our topgallant sail last night adds another to the list.

November 1st.—It has calmed down to a six-knot breeze astern of us, and we are making good weather of it on our course to the southward. The ship's washing flies in the wind without adding to her beauty, but there is every prospect that it will be dry before night, which is far more important. I looked into the ship's library this morning and found "Ben Hur," by Lew Wallace. These ship libraries are furnished by a set of philanthropic individuals, whose object is to rescue the mind of the sailor from its dark ignorance and his soul from the devil; consequently, they mix their literature pretty thoroughly with tracts and Bible dictionaries, all of which the sailor carefully avoids. Jack has no time to think of his future state. Thoughts of death would be ruinously depressing to the nerve that gets little sleep and yet must be always ready for the struggle on the yardarm with the slatting sail. Unfortunately, when a sailor wants religious consolation, it is time for him to go ashore.

If he wants to indulge in the joys of an education above that which he gets in the crimp's boarding house and the forecastle, he must stay on the beach. Some time between drinks at the little grog shop, or between the hours for sanding the sugar at his little corner grocery, he may find time to read and grow wise; if he finds an hour a week on a Yankee clipper to improve his intellect he will, if he is a sensible sailor, put that hour in for sleep. His earnings, as I have said before, are too meager for saving and thus passing his old age without want, so the sailor's "snug harbor" is all that he has ahead of him. A waiter gets from twenty to thirty dollars per month and his board, a coachman gets from twenty to fifty, but "the jolly tar" gets eighteen dollars per month and an oath on pay-day. In America the laws which affect seagoing men are better, perhaps, than those of any other country, but they are not well enforced.

Close to where we are to-day is a rock, reported rising out of the middle of the ocean from a depth of two thousand fathoms. It is just awash of the swell and has just been discovered. This is supposedly authentic, and it is doubtless being put on the latest chart by this time. We are a couple of hundred miles to the southwest of it, and as our course draws more and more to the southward as we get to the eastward, we will not have the pleasure of viewing it. It is doubtless the effect of volcanic action, for the whole bed of the equatorial Atlantic is of a volcanic nature, and as this is in only about 30 deg. N. lat., it is more than likely that its origin is due to this cause. In the Pacific these rocks are reported often. How this happens it is hard to tell, for many times I have known vessels to sail right over the spot where they are marked as "doubtful" on the Admiralty charts.

The sun set clear and there is every probability that our course will cease to be the zig-zag one it has been. A red sunset is a good sign, generally, for fair weather.

CHAPTER IV.

November 23rd, Lat. 23 N., Long. 37 W.—We are heading a little to the eastward of south, sailing tall and straight on the starboard tack and making fair time. The wind, which is the northeast trade, is hauling to the southward. The trade wind, whose presence is explained by scientific observers to be caused by the earth's greater movement at the equator and the greater

warmth of that zone, is a little out of rig. From here, all the way down to 3 deg. N. lat., it has been to the southward of east by south, varying from southeast to east by south, but never getting as far to the northward as east. This had the effect of driving us over to the westward and making us tack ship on the thirteenth and stand to the eastward in order not to get "jammed" off Cape St. Roque. Vessels getting too far to the westward, by holding on in vain hope of a slant of wind, lose more time by this than by tacking ship while well out and working down to the eastward thirty-fifth meridian. Just about the time they get down to the Cape they find the wind dead ahead and must stand over to the eastward, anyhow, to reach down the coast of Brazil.

It is very pleasant on board ship now, although it is very monotonous. Our two little pigs, that we have kept carefully under the forecastle, were turned out to root on the fertile main deck. Here they scampered and grunted away at such a rate that the captain's dog, Jim, a little terrier, immediately gave chase. With the barking of the dog, the grunting of the pigs and their screams as they were seized in turn by the ears, and the cackling and crowing of the coop full of chickens set out on the hatch in the sunlight, it seemed as though we were in a barnyard ashore, instead of the middle of the ocean.

It is curious to watch the pigs, as they go about the deck, trying every seam with their snouts to see if anything can be rooted up.

The cook's big white cat has at last come out of the galley and is sunning himself on the hatch. A sailor went up to it, saying, "Keetie, keetie; nice leetle keetie," and put his hand on the somnolent beast. "Whack! Zip! Pish-h-h!" and the "nice leetle keetie" had drawn several parallel lines in blood on the kind-hearted sailor's hand.

"You damned brute!" said the man, aiming a blow that would have knocked the cat clear across the equator had it struck it; but it jumped nimbly aside, and just then a voice roared out, "Let that cat alone, you burgoo-eating scoundrel! What d'yer mean by deviling that cat and spoiling its temper? I'll teach yer how to treat a poor dumb brute!" and the bow-legged form of the mate came lurching down the weather gangway.

I had a look at the third mate's log-book the other day. It read thus:

"Calm. Wind from the southeast,"—I think that I've mentioned that the third mate was not nautical—"I wish I was ashore." —"Mr. Enlis, he's made of leather, the sucker, and it works the pump all right." I did not quite catch the meaning of this last sentence, so I asked him if they had indulged in another quarrel; but as he was positive that there was no ill-feeling existing between them, I concluded that there was something wrong elsewhere; probably the pumps. "Lights carefully tended to. All well."

At another place it read thus: "I believe my time has come and I'm going to die. Well, let it go. A sleep in the middle of the Atlantic Ocean is clean and it appeals to me. I always hated graves. Devilish nasty and dirty, a burial in the ground, but here a body sinks and sinks for miles into the blue, and when it reaches a depth where the pressure is so great that it can't sink any farther, there it hangs in suspension. No decay; but for countless ages drifting with the deep ocean currents to turn into stone. This log-book will be yellow with age, and perhaps mouldered into dust, but the hand that wrote it will be everlasting stone, in the bed of this grim and grey old melancholy waste. Bryant has never been to sea, or he would not have called this ocean grey, for faith, it's as blue as a sapphire."

On the fourth, about noon, we sighted a vessel. We hoisted our name signals and she hove to and waited for us to get closer, as she had already crossed our bow and was heading to the westward. Our captain would not keep off one point, so the consequence was that we did not get within three miles of her. She proved to be a Norwegian bark, loaded light; but we could not find her name in the register. We gave our longitude as 36 deg. W. They gave theirs as 35-46 W. Our latitude was 19 N. They set one or two other signals, but we were too far away to understand them, so she finally paid off again on her course and was soon out of sight.

"SAILING, TALL AND STRAIGHT, ON THE STARBOARD TACK."

On the fifth, the wind headed us off, so that we were forced to come about and stand to the eastward. This is hard luck, for we are making no southing, although in the latitude of the Cape Verde Islands. However, at daylight on the sixth we came about again and stood to the southward, having made but thirty miles on the other tack. The weather is warm and damp and the heavy trade clouds temper the scorching rays of the tropical sun.

CHAPTER V.

To the sailor, a voyage around the Cape is divided into five chapters. First, on leaving port he looks forward to the crossing of the equator; after this, it is the River Plate that occupies his attention; from here, it is the struggle around the Cape that he looks forward to with concern, this being from 50 deg. S. in 60 deg. W., to 50 deg. S. in 80 deg. W., as a vessel having passed the fiftieth parallel, to the westward of eighty degrees of longitude, west of Greenwich, is generally considered as having passed all danger of being driven back off the Cape. From here, to the vicinity of Juan Fernandez and the southeast trade, is but a short distance, and then it is the equator in the Pacific that must be crossed, with its doldrums, or zone of calms. Once into the northeast trade, the voyage is looked upon as nearly over, and every one begins to talk of home, each sailor solemnly swearing that he has made his last voyage around the farthest Cape. From the beginning of the northeast trade, to the time the vessel gets close enough to sight the coast of California, is usually only a matter of a few weeks, but it seems the longest period of the voyage. On the 19th day of November, after having stood over to the eastward as far as the outer edge of the Guinea current, we crossed the equator almost midway between Cape St. Roque and the coast of Africa, standing to the westward on the port tack and describing an arc of a huge circle, as the wind hauled gradually to the eastward the further south we got.

(To be continued.)

Gasolene Boats in Naval Warfare

PART II

By LEWIS NIXON

RELATIVE to the question of danger in the use of gasolene in torpedo boats, the views of Captain R. H. Bacon, Royal Navy, who was said in a speech lately delivered in the British Parliament by the Secretary of the Admiralty to be the foremost expert in Great Britain, are most interesting. In a paper read before the Institution of Naval Architects, the foremost technical society of the world devoted to naval engineering science, he says:

"As regards petrol, the main important consideration is that to cause an explosion, first a leakage of liquid petrol is necessary, and secondly a spark is required to ignite the mixture. A leakage can invariably be detected by the smell, should it occur; but in a properly designed system, leaks should be practically non-existent. Even with vapor in the boat, no direct danger exists, provided the boat is properly ventilated and no switch is used or anything done to cause a spark. As a matter of fact, in practice, the smell of petrol inside a boat is almost unknown. Boats are practically free from all chances of accidents with the engines at work, since the volume of air used every two minutes is equivalent in volume to that of the whole air of the boat; with such enormous ventilation going on, no chance of vapor accumulating is possible.

"A prevalent idea is that the petrol tanks themselves are a source of danger. A moment's consideration will show that no danger from this cause can exist; since whenever a closed vessel has petrol inside it, the enclosed air is saturated with vapor and is therefore non-explosive. The tanks are constructed so that leakage is impossible and many other precautions are taken so as to minimize every other source of possible leakage in the petrol system. The English boats have covered over 30,000 miles under their engines with the exception of one small flash in an early boat, no explosion except that in No. 5 has occurred. Had the very explicit and simple regulations provided been carried out no accident would have occurred.

"This of itself is fairly good evidence of the safety of petrol when moderate care is exercised. We may, I think, assume that danger to boats from explosion is really small and not greater in comparison than the dangers which have attended the introduction of increased boiler and gun power in the navy as a whole."

I can supplement the expert opinion of Captain Bacon by pointing to the thousands of vessels in America using petrol motors, but think the experience of the twin-screw Gregory crossing the Atlantic Ocean in winter, blown hundreds of miles out of her course by terrific hurricanes, using every kind and grade of gasolene on her trip, having four men sleeping and living in the engine room, and not one explosion of any nature during a trip of six thousand miles, doing what no steam vessel of like size and power would dare attempt, should show that this motor is trustworthy and has come to stay.

No better summing up can be made than by quoting from an article written by Commander A. B. Willets, U. S. Navy, for the *Journal of the United States Naval Engineers*, the official organ of the naval engineers of the U. S. Navy.

"The immense increase, during the past few years, in the use of the gasolene engine for boats of small and moderate size and the coincident rapid development of the gas engine for large power plants on shore, has brought the internal combustion motor not only into universal prominence, but has made serious its consideration as the coming substitute for the steam engine as a prime mover.

"While the passing of the steam engine will be no sudden death, we will within a decade see at least some sea-going crafts of large power using the explosive mixture motor—van guards of the future fleet of 'steamers' without steam.

"With modern high pressures the care of the steam plant on shipboard demands the most strenuous and exacting attention of any known pursuit.

"The steam installation afloat has reached about the upper limit of its efficiency. We can see no probability of handling very much higher pressure, nor can we predict, even with the turbine and with superheated steam, any very great increase in economy or serious decrease in the distressing features of the life below decks.

"Hence, when there appears a new form of converting heat into work, which is not only of greater efficiency in such conversion, but also at one stroke removes three-fourths of the objectionable features of the steam plant, those who have long endured the latter give more than a fleeting glance at the innovation.

"Cooking, lighting, distilling, heating, pumping, all can be carried on by the electric fluid, but there will also be independent motors for any particular auxiliary work and the heat of the main exhaust will be utilized, when under way, for heating and distilling.

"Besides the above, the weight of machinery will be enormously reduced.

"As regards the motor itself, there are no real difficulties at present unconquered.

"The installation (300 horsepower) in a 60-foot launch built for service between Indian Head (U. S. Navy Proving Grounds) and Washington stood a most satisfactory trial and gave excellent performance. This is a single acting, six-cylinder, Standard gasolene motor, which has proved perfectly satisfactory under manifold tests. It is of light construction and its peculiarity is that it is started and reversed by means of compressed air and a single movement of a cam-shaft lever, exactly as if handling an ordinary reverse link motion.

"Practically the handling of this motor is very simple, there never being a moment's hesitation in the action of the engine or the result on the boat, as the motor jumps to the full speed almost instantly.

"The 300 horsepower in the 60-foot Indian Head boat weighs: Engine and flywheel, 6,661 pounds; pumps and piping, 418 pounds; shafts, propeller, bearings and stuffing boxes, 1,732 pounds; compressed air tank, 537 pounds; auxiliary engine and piping for compressed air tanks, 310 pounds; making a total of 12,658 pounds, or about 40 pounds per brake horsepower.

"With double-acting motors this weight is obviously reduced, and in the 500 horsepower double acting engine the weight approximates 35 pounds per brake horsepower for complete installation; and as the powers advance in single units it is within the certainties that a substantial 1,000 horsepower installation can be built at a weight of 30 pounds or less per brake horsepower.

"The average weight of machinery plant of torpedo boat class is at present about 55 pounds per indicated horsepower, and the weight saved by the new installation applies also to reducing space occupied.

"The difference in weight can therefore either be utilized by increasing fuel-carrying capacity or in decreasing displacement of vessel. In any case, the radius of action of the vessel is largely increased as the general running economy will be increased and the saving in fuel now used for stand-by purposes and getting up steam will add to the amount available for cruising, while with liquid primary fuel, weight for weight, the cruising radius will be more than doubled.

"Gasolene is an ideal fuel for the practical operation and retention of light construction in this class of machinery, with alcohol-gasolene mixture and kerosene closely following.

"We may assume that gasolene can be safely carried as fuel on shipboard, as it is merely a matter of care in construction of tanks and fittings and attending to readily provided guards against the now well-known conditions of danger. The dangers attendant upon the carrying of gasolene have been greatly magnified and with a proper development of tank construction and absolute integrity of piping, there is no plausible reason for accident. The proportions of air and gas for explosive mixtures are well understood, and a proper prevention of the accumulation of such within the confined spaces of the machinery development, and proper precautions regarding use of open lights, etc., in such places are easily carried out.

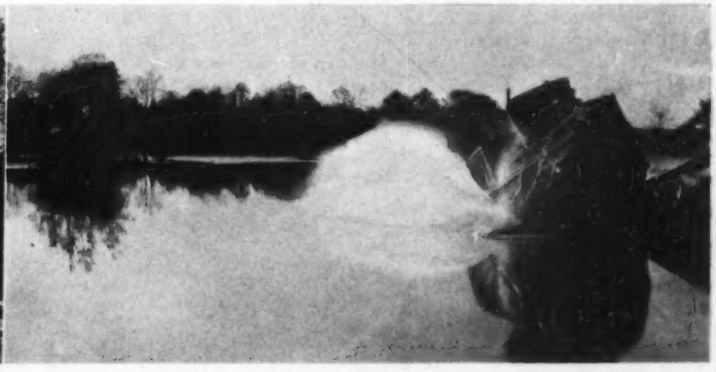
"At first glance the cost of gasolene would appear to render gasolene prohibitive, but in the torpedo boat class we have very different conditions and the offsets against the excess in first cost of fuel bear a far greater proportion to the annual coal bill than they possibly can do in battleship or cruiser.

"Decreased expenditures for 'stand-by' purposes, engineer's force, decrease in cost of repairs and upkeep (in which retubing of boilers about every three years is a tremendously large item) and decrease in interest on cost of plant are so serious as to strongly support the assertion that the annual cost to the government for a gasolene motor torpedo boat will not at all exceed that of the steam-driven boat of same type and power.

"But even should the actual cost be somewhat greater, they will never be incommensurate with the advantages gained in rendering these vessels infinitely superior for naval purposes, and any one contemplating the great objections to steam machinery on these vessels can readily realize that torpedo boats using gasolene machinery would have advantages against which the actual cost of the fuel should have no possible weight.

"Most of those advantages also attend upon the use of such motors in ships, launches and tenders where immediate availability is frequently a vital necessity and where the boiler integrity is always one cause of anxiety, expense and uncertainty. Also the weight question in such boats with gasolene machinery is very seriously in favor of the latter."

READY TO GO OVERBOARD. NOTE THE WAYS EXTENDING BEYOND THE BANK. THE WEIGHT OF THE BOAT, ONCE SHE IS OVER THE EDGE, DEPRESSES THE OVERHANGING TIMBER, AND DOES THE REST OF THE WORK.



THE BOAT AS SHE CLEARS THE BANK. AT THIS POINT OF HER PROGRESS THE WEIGHT OF THE CRAFT HAS DEPRESSED THE OVERHANGING WAYS AND HER MOTION IS ACCELERATED.

How to Launch from the Side

By FRANK C. PERKINS.

THE accompanying illustrations show how a gasolene boat, instead of being launched in the regular way, was put overboard sidewise, which was necessary because of the shallowness of the water. In launching, three ways are laid to the proper grade, leaving the boat level, and a long shoe with guides is provided, this being bolted to the center way at the upper end, the space being blocked up solid between the shoe and the boat. As noted in the illustration, when the launching takes place all of the blocks are removed, leaving the boat resting on the shoes, the center shoe bolts holding it until the boat starts down the ways as soon as the plank has been cut off below the bolts.

This boat was set up twenty feet from the edge of the tow path, with three ways, thoroughly tallowed, under them, the shoes are laid across the boat's bottom, the boat being constructed on a level. The ways are wedged up to the boat and hang out over the water.

AFTER THE PLUNGE. THE BOAT READY TO BE TOWED AWAY. THE WAYS HAVE NOT YET BEEN REMOVED.

The blockings are arranged under each way, from the center line to the edge, with a proper grade to give the necessary declivity when the boat is launched. A trip consisting of a stout shore is provided under the center of the hull on the side next to the water. The boat is placed upon jacks and the lower blockings are removed, leaving the weight of the ways hanging on the shore used as the trip. The ways tip the boat to the proper level when the shore is driven out.

How to Buy a Yacht

By HENRY IRVING DODGE

TO HEAR men haggling over the exchange of boats is as curious as witnessing a horse trade. The uninitiated wonders what they are about—why they are about it at all. To him the position of each is paradoxical. Brown sees nothing but good points in the craft he is trying to get rid of, while Robinson recognizes—at least acknowledges—only the defects of the craft he is using all his wits to obtain for himself. The comedy of it is, each knows that the other is bluffing and each knows that the other knows that *he* is. Yet they keep it up in all seriousness. Presently Robinson makes his banner bluff. "I'll see what I can do down at Jones's," he observes quietly. Then he starts to go away. This is the bluff test. If Brown lets him get beyond the gates of the yard, he knows that his pride will keep him away. Pride cuts off more noses than spite. On the other hand, Robinson knows from actual test that he will not be able to do so well at Jones's. With experienced bluffers, however, a loophole is always left through which negotiations may be resumed without violence to pride.

But this article is designed for the uninitiated. To him the best advice is: "Hire a broker." The reason is obvious: one rarely sees two unsophisticated parties to a bargain. One of them is likely to be expert—at least, to possess superior special knowledge. The seller of a boat has familiarity with the traits of his craft—vices, if you please—not apparent from a superficial inspection of her. She may be as beautiful as a swan, yet tricky as a cat. One cannot put her through her paces as he would a horse. It takes all kinds of weather to test a boat out. She may do splendid work double-reefed in a seaway, yet be a regular scow in fair weather—or, *vice versa.*

Bargains are not always as plentiful as they are this year. This does not mean that one can buy a good boat for practically nothing; but it does mean that the seeker for bargains is likely in these times of financial stress to find more men who are in a hurry to part with their yachts at something of a sacrifice than ordinarily. At the same time, this axiom should always be borne in mind: A cheap price nine times out of ten argues a poor boat. Nothing is more true than this. The fact may not appear on the surface, but a week or so of sailing will bring it to light in no uncertain way.

AT THE YACHT BASINS THE PROSPECTIVE PURCHASER WILL FIND EVERYTHING FROM A 15-FOOT SLOOP TO A STEAM YACHT.

In looking about for a boat it is reasonable to assume that the prospective purchaser has well-defined ideas as to the waters in which his craft is to be used. If the cruising or racing courses be shallow, a centerboard boat is the yacht for him. Keel craft are for the deeper waters. Go to a broker, who, after the general type of boat desired is made known, will select from his list of a thousand odd craft of all sorts and types, three or four, or perhaps a dozen, which in a general way meet the requirements of the patron. These boats will probably be at different yards, so that a half-day or even a whole day may well be occupied in the process of examination.

It is well to observe the proportions of a boat. If she is to be used for extensive cruising, she should not be too shoal and wide—such boats are not to be trusted in bad weather. They are very good west of Newport—that's all. A boat 80 feet on the water line should have a beam of from 21 to 22 feet and a draught of not less than 10 feet. All the better if she have a center board.

If the boat be of steel and is an auxiliary, special attention should be given the stern in the region of the wheel aperture. If the latter part is not well defended with zinc battened to the edges of the shaft tunnel, the whole stern will be corroded and pitted, owing to the galvanic action caused by the combination of the bronze propeller, the steel hull and the sea water. One cannot be too careful in inspecting a boat having such a propeller. Only an expert can detect this corrosion. As a matter of fact, the boat may be found to be eaten through in places and wholly worthless.

If the purchaser is to depend upon his own inspection he will do well to bear in mind the proverb: Good paint covers a multitude of structural shortcomings. Always be suspicious of a newly painted yacht. The first places to examine, if the craft be a sailing yacht, are the garboard strakes (the first line of planking above the keel) and the rudder post. In these places leaks first make their appearance. One is also likely to find decayed wood in the quarters. The way to detect this is to take your pen knife and jab into the frames and the planking at the points suggested and elsewhere about the hull. If the knife goes in without great trouble, it is fair to assume that age and wear has begun to tell on the woodwork. Work the blade around in the hole and see the powdery dead wood ooze out. About the rudder post, the danger points to search for lie in the deadwood aft and forward of the post. Try your knife there, by all means. In the mast step, too, there is apt to be decay. Try your knife there, and also test the mast itself where it goes into the step. Stick the knife also into the bowsprit where it joins the deck and puncture the stem. If at all these points the wood resists the blade, it is fair to assume that the hull is as staunch as a new one.

Slack up the rigging and twist it and bend it in the hand. If it cracks or the strands open, new rigging is a necessity. Where the rigging is made fast to the hull, make sure that putty is not issuing from the seams of the planking. Oozing putty means weakness. Mildewed canvas should be looked out for. At least, no expert is required for this.

It sometimes occurs that a designer conforms to the owner's ideas in building a boat and will thus produce freaks. But, as a general thing, owners are sensible men, recognizing that yacht designing is a profession and that he who follows it must, of necessity, have skill superior to that of the layman. The most frequent difficulty to be met with is this: The owner often dictates the cabin arrangements, at which the designer does not demur, since this does not interfere with the more essential qualities of speed and staunchness. But it is here the owner stands in his own light, if he realizes that he may some day have to sell. While the cabin arrangements designed by him may suit his own purposes, they are, as a rule, freakish. Now, one of the first things a buyer observes is a boat's interior layout. Of this the greenhorn may certainly take cognizance, although he may not be qualified to judge of the craft's form. Now, if these arrangements suit him, it goes a long way towards selling the boat. But they must suit him absolutely. Curiously, would-be buyers are dead set against spending money on improvements. Obviously, the seller cannot change his boat to suit the buyer unless a contract be made.

In the matter of exchange of boats, the difficulty in trading yachts of the same type is that invariably each man who wants to exchange desires a larger boat. You cannot trade a 40-foot boat with a man who has a 50-foot boat and wants a 60-footer.

But with different types, from sail to power or *vice versa*, it is easier. Then comes the matter of adjusting values, and in this the middleman earns his commission both ways. One cannot base values on size, since some boats are old, some new, some desirable, others not. Here is where the designer's name plays an important part. Some boats will sell at close to what it costs to build them, while others, not of a popular type, will have practically no market. Styles in yachts change as in everything else. There is a great difference in models of the present day boat from that of the same type of a dozen years ago. So, as there is practically no rebuilding of yachts nowadays, and even if you did rebuild your old boat you would still retain your undesirable model, it is clear that it would be better to break her up and apply what you can save from the wreck to the equipping of a new one. This fact is particularly true of gasolene boats, the models of these having changed markedly during the last five years, so that those built half a dozen years ago are now altogether out of date. There is no marked difference, however, in steam yachts, the models of these having changed but little during the last twenty years.

The life of a staunch motor craft is considerable. Some of the best makes are still doing good work after fifteen years of service, and rare bargains may often be had in these. Twenty to thirty years is not particularly old for a sailing craft. She may be old-fashioned, but wonderfully comfortable, and speedy enough for those who are not ultra fashionable.

There are three kinds of houseboats, those having sail power, those with gasolene motors, and those which have no means of propulsion, but which are towed from place to place, usually by their own auxiliary tenders. From the smallest of these, with but one room, to those which give accommodations equal to those of a city apartment and have three or four rooms, prices range from $250 up. The most expensive of such craft, having steam or gasolene and being fitted with all modern luxuries, range from $50,000 up.

TESTING THE HULL. WEAK PLACES ARE OFTEN DISCOVERED AT THE GARBOARDS.

The directions given above for testing the hull of a sailing vessel apply also to that of the power boat.

In purchasing a power craft, there is an additional factor to be reckoned with, the motor.

Unless one knows just how to locate the ills to which gasolene motors are heirs he will save time, money and much future trouble by having the engine inspected in his presence by a mechanic who knows motors and does not know the owner of the craft inspected.

Age and the amount of service which an engine has had has less to do with its second-hand condition than the treatment and care which it has received, and many a comparatively new engine has been worn out through the mistaken economy of its owner in regard to the use of lubricants, while another motor of the same make and longer service may be secured in splendid running order.

To determine just what is a bargain in the power equipment is the expert's duty, and he is worthy of his fee.

Do not make the mistake of purchasing a craft too small for the water upon which you intend using her.

A 16, 18 or 20-foot open launch is just what is, in the majority of cases, best suited for running around on small lakes and rivers, when there is little danger of rough water, or where in case a heavy blow *does* come up it will take but a few minutes to reach quiet water under the lee of the shore.

On the other hand, from 22 to 25 feet over all is small enough in all conscience for open water, and the chances are that when the whitecaps commence to send their spray aboard you will, even with a 25-footer, wish that she were, temporarily, a few feet longer.

For salt water use it is usually a mistake to purchase a boat too small to tow a dinghy. It's no joke to make a landing on the shore, on a falling tide, and be obliged to push the boat off afterwards or take chances on her being swamped or pounded by the swell as the tide rises.

The old fantail stern and clipper bow are now generally out of date, as far as appearance is concerned. For a small open craft, particularly the slightly raking straight bow or the spoon bow and compromise stern is the most popular if great speed is not desired, while the compromise stern allows her squatting aft and gives a longer water line on a given length than the fantail, the torpedo stern, either flat, V-shaped or corset-shaped is even stronger on those points when speed alone is to be considered.

The latter type is less beautiful and, as a matter of fact, less desirable for cruising purposes, being less comfortable and dry in a following sea.

The above-water-line self-bailing cockpit has pushed the old-fashioned below-water-line cockpit to one side. If a man is willing to cover the cockpit nights or to bail it out after a rain, he may be able to strike a bargain in an otherwise very desirable cruiser.

The raised deck plan of cabin has put many trunk-cabin cruisers on the market during the past season or two. As a matter of fact, the older style is just as good for many purposes and even superior in some cases, when on a small or moderate size boat, say up to 30 feet, as it gives more usable deck room.

The cruising launch should have, in addition to sleeping accommodation, a galley and provision for stowing food, clothing, ice and water. Closet room is better than polished brass fittings, and a large well-insulated ice-box is more important than plush cushions.

When it comes to the question of power equipment, don't be led into purchasing a craft with a motor that will consume more fuel than you care to expend on a day's run. A fast boat means a large gasolene bill, while a moderately powered, moderate speed boat will serve the cruiser and keep down his running expenses.

You cannot get everything desirable in one craft, and the best that can be done is to see that the boat you buy is long on those features which you will require most and that her shortcomings are those which will least affect her when put to your own particular service.

HOW TO BUY SAILING CRAFT.

Unlike motor boats, new sailing yachts are seldom if ever kept in stock. If you desire to spend your season in a brand new craft, your ambition may be attained only through a designer and builder. It may be that a man who has already done this wishes, for some reason or other, to sell the yacht before or immediately after she is launched. In that case you may, if you chance to know that such a boat is for sale, buy a new craft without preliminary bother. But, naturally, such opportunities are as rare as the proverbial hen's teeth.

It would appear hardly necessary to waste time searching for a man of this sort, however, since you may have a fine catboat, of 16 or 17 feet water line, designed and built at a cost of from $200 to $300; a sloop of similar length, from $300 to $500, and so on, at rates increasing in proportion to the water line length of the yacht. For instance, Inter-Lake Association yachtsmen are having 16-foot sloops designed by the most eminent naval architects and built at the best Western yards at an aggregate cost of $500 each. In all such cases it is not necessary to pay the lump sum outright. For the 16-footers, for instance, a payment of $100 at the signing of the contract, $200 when the boat is planked and the rest when the craft goes into commission are the usual instalments throughout the country.

CATBOATS.

For those who do not desire to build there is but one thing to do—buy a second-hand boat. The average second-hand yacht which has been well cared for is almost, if not quite, as good as new anyway—sometimes better than new. The choice of a boat depends upon circumstances, chief of which are the waters upon which she is to sail. Upon shoal waters, like Great South Bay, Barnegat Bay, Raritan Bay and inland lakes—not the Great Lakes—and rivers, a light draught catboat with a centerboard will serve its purpose as racer or cruiser to best advantage.

Take the cat-rigged yacht with stationary ballast and centerboard and you have one of the handiest crafts in the world. Sloop sailors will argue that having the mast stepped so far forward renders the hull liable to strains and makes her the most cranky sort of a craft in going to windward. Yet, in general handiness, particularly for the lone skipper, the cat cannot be beaten by any yacht in existence.

Cape Cod fishermen go to sea in them, and the famous Newport cats flit about in the vicinity of the Brenton's Reef Light Vessel when half a gale is howling over the ocean. There are always any number of second-hand catboats for sale, and an advertisement will bring you at least a hundred replies.

"BUG" BOATS.

A good boat to buy, if you desire single-handed racing with room to carry a helper, is one of the latest types of freak boats, known as "Bugs." These are merely oblong boxes with a fin keel. They are rigged with mainsail and jib, spreading something like 250 square feet of canvas. There is a 400-pound bulb on the end of the fin and the water line length is about 14 feet. They are, next to the dory, as weatherly craft as there are in the world. On the Sound last year two of them went through the race at Larchmont in a 25-knot wind without the slightest difficulty, whereas several larger boats met with accident. One yachtsman, an owner of one of these craft, went out with the writer last year with the express intention of trying to upset her. He failed ignominiously. You should be able to buy a second-hand "bug" for $120.

THE DORY.

The dory, that wonderful little product of the Yankee fisherman, is now extremely popular, and there is hardly a club that does not include dory classes in its various regattas. The cheapness of the craft is very much in their favor. The cost of a new dory, 24 feet over all, will not exceed $75, and, of course, second-handed, the price is reduced proportionately. The mast is stepped in the forward thwart and a leg-o'-mutton sail and jib are hoisted. The jib sets on the stem head. A centerboard is fitted just aft the mast and is raised and lowered in the trunk by a hook. The best thing about these boats is their safety. It is almost impossible to capsize them, and so they are just the boats in which to learn to sail.

THE YAWL.

For more experienced sailors, who go on long cruises or in deep water, the yawl has many merits. For the single-handed sailor it is the ideal craft. The sails are so divided that they are small and therefore easily managed, but this division detracts from speed. That is why yawls do not win cups, except from one another. The yawl usually has three sails, mainsail, foresail and mizzen or jigger sail. The jigger, once set, takes

care of itself and serves to steady the craft and to assist in steering. The yawl, in fact, is never out of control. If a storm comes you have but to lower your mainsail and you are at once riding under two fine storm trysails, that is, the foresail and mizzen. All things considered, the yawl is the best boat upon which to make long-distance trips, especially when you are doing most of the work yourself.

SLOOPS.

Sloops are the great American racing boats, ranging in sizes from 14 to 90 feet. The fact that the majority of them are built for speed has tended to produce among craft of that type extremities of model, which militate against all-around work. Yet there can be found for sale in all shipyards sloops of healthy type, carrying jib and mainsail, or several kites in addition to the mainsail, which, with the mast not stepped too far forward, are eminently satisfactory craft, running, reaching, or threshing to windward.

KNOCKABOUTS AND RACEABOUTS.

Some years ago there was built a class of boats of 17 or 18 feet, designed for just what the name implied, knocking about in all sorts of weather. They were substantial centerboard craft, good for cruising or for racing. The racing fever grew in this class and owners seeking for greater speed had boats built with greater overhangs, greater sail spread and lighter construction, until the men who retained their old yachts raised a cry that the new craft were not knockabouts at all. Thus was born the new name, "raceabout." Raceabouts are now doing about all the racing, while the knockabouts are leading prosaic lives in the hands of placid sailors. You could not own a handier little sloop than a knockabout for a day's sailing. Any yacht broker has them on his list for sale. The knockabout has no bowsprit, the jib being attached to the stem head. This is about the only difference from a raceabout that strikes the eye of the un-technical observer.

LARGER CRAFT.

When it comes to the larger craft, if you desire a comfortable cruiser, the large schooner is preferable to the large sloop. The handling is less complicated, quarters and accommodations are more adequate, and the fore-'n-after is the more weatherly boat of the two. In reaching, the schooner is as swift a craft as will be found on the Atlantic. The advantages of an auxiliary engine, either schooner or yawl, speak for themselves. Boats of this sort are for sale everywhere. In fact, you can name any boat of any rig or type or size and there is hardly a yacht broker who will not be able to meet your desires promptly.

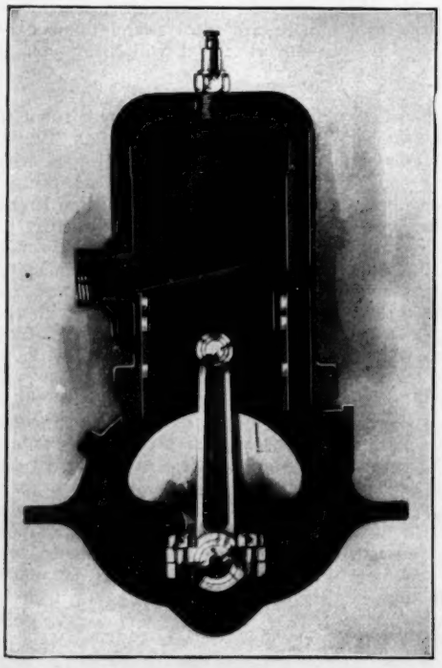
Putting the Engine in Commission

By HERBERT L. TOWLE

EVERY machine wears out sooner or later, and marine engines are no exception to this rule. An engine which ran well when the boat was laid up last fall, should run equally well this spring when the stale oil has been washed out and the batteries renewed or recharged. That, however, does not mean that it will continue to run well till the end of the season, and the proper time to renew or refit such worn parts as are going to give trouble before long is before the boat is put in commission.

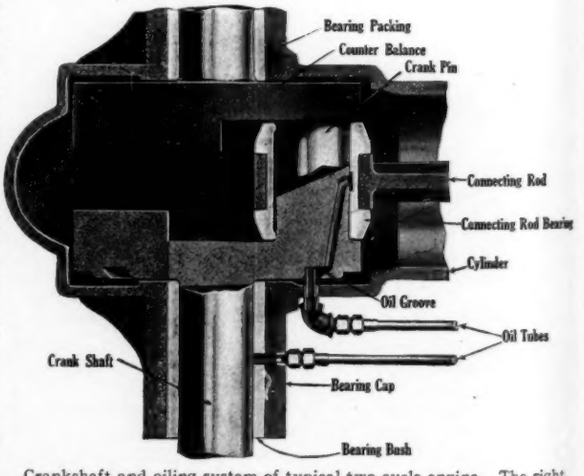
No two engines will be exactly alike at the end of a season's or several seasons' use, and consequently the owner must use his common sense in determining what is necessary. Different types of engines, however, require different attention, and an outline of these classes of treatment will help the inexperienced owner to diagnose the case of his own engine.

A reasonably well built engine which has been little used is quite likely not to require refitting of the crankshaft, crankpin, or wristpin bearings after a single season's use. If no pound has been noticed when running, the wear may be tested by first washing the bearings out with kerosene (which may be introduced via the grease cups), and then prying gently upward with a bar at the ends of the shaft to disclose possible looseness. Play in the crankpin bearings may be detected by setting the cranks at half stroke and gently rocking the fly-wheel, while an electric flashlight is directed on the lower end of the connecting rod. If the weight of the piston carries it down against the ring friction, they may be propped by a stick while the crankshaft is rocked. A four-cylinder engine may have certain bearings loose while others are tight, and each one should be separately investigated. A play in either main or crankpin bearings of .004 or .005 of an inch, which is about the least that is distinctly visible, is sufficient to demand that the old bushings be refitted or new ones be put in.



Typical two-cycle engine in section showing the piston, connecting rod, crank and counterbalance. The exhaust port opens to the left. At the right the piston uncovers the transfer port by which the slightly compressed mixture in the crank case passes to the cylinder above the piston—the piston is oiled by splash from the bottom oil pocket.

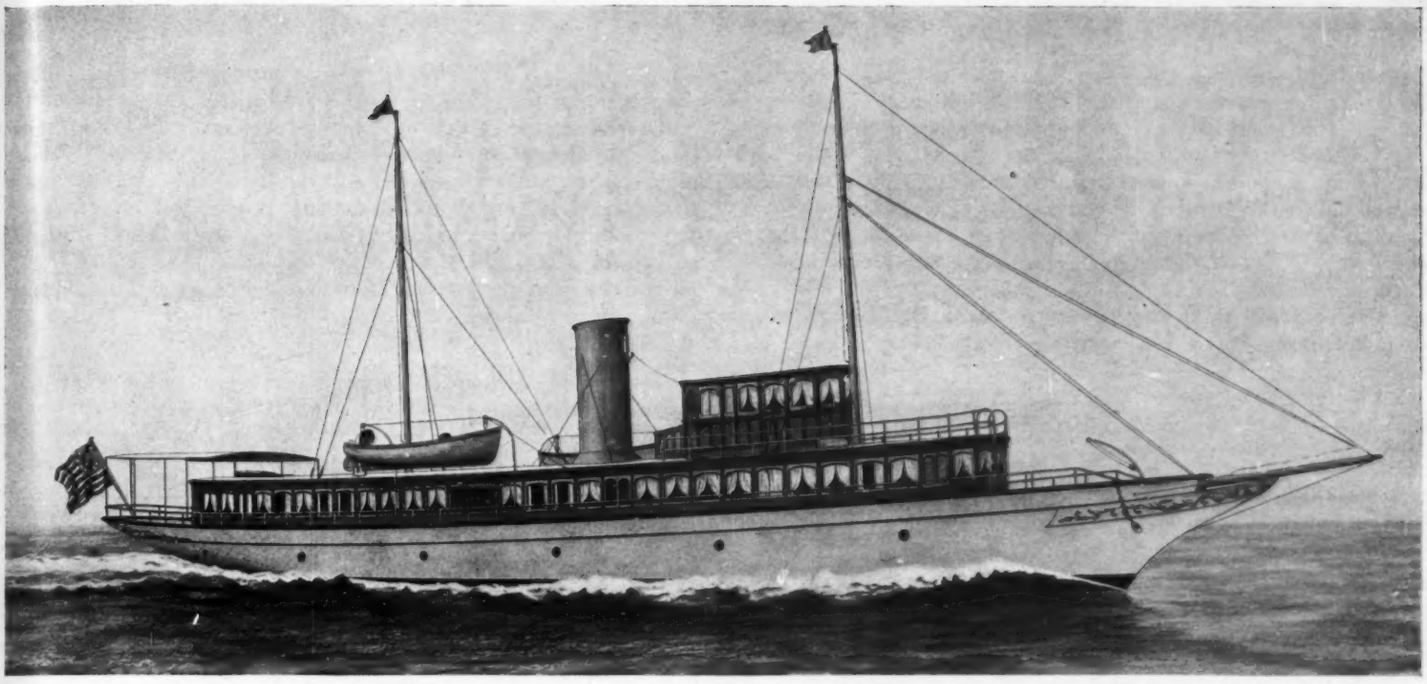
The mechanical overhauling needed will depend largely on whether the engine is of the two-cycle or four-cycle type. Some two-cycle engines are very cheaply built, and the main shaft bearings are lubricated with grease, for the double purpose of accommodating the inaccuracies of shaft and bushings and retaining the compression in the crankcase, which would blow past the loosely fitted bearings if oil were used. Such an engine may require almost no overhauling, except putting new bushings in the main bearings and taking up the wear in the crankpin bearing. The main shaft bushings will probably need no fitting unless the shaft has been cut by lack of lubrication and has had to be trued up. In such case, special bushings to fit its reduced diameter will be needed. The split bushing on the crankpin, however, ought to be scraped to a true fit, and for this purpose the connecting rod and shaft should be taken out and the work done by a competent machinist. The paper or copper shims sometimes provided for the easy taking up of bearings are a poor reliance for accurate fitting, and would much better be discarded altogether in favor of solid strips sweated to the connecting rod cap. In assembling a two-cycle engine after the bearings have been refitted, care must be taken to have the crankcase gaskets absolutely tight, as any negligence in this respect will prove costly in both gasolene and power. If there is a gauze screen in the transfer passage between the crankcase and cylinder, it should be taken out and thoroughly cleaned with gasolene.



Crankshaft and oiling system of typical two-cycle engine. The right hand crank and counterbalance have a circular oil groove into which oil is fed from a mechanical oiler. The shape of this groove retains the oil by centrifugal force, and the oil goes to the connecting rod bearing by the passage shown.

Either a two or four-cycle engine should have its piston heads and combustion chamber surfaces scraped clean of all carbon deposit every time the engine is opened for overhauling. The tendency of this accumulated carbon is to become incandescent and hasten unduly the com-

(Continued on Page 234.)

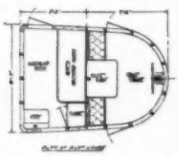


JEMIMA F. III, A LARGE POWER YACHT, WHOSE LIVING QUARTERS ARE MODELS OF LIGHT, VENTILATION AND COMFORT.

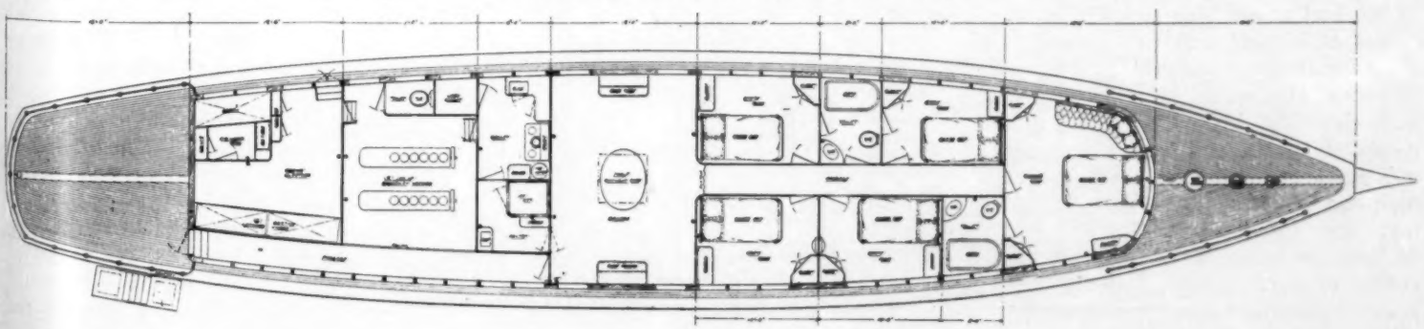
A Twin Screw Power Yacht

JEMIMA F. III is a new craft designed and building for Chas. H. Fletcher of New York City by the Gas Engine & Power Co. of Morris Heights, who also built Mr. Fletcher's former craft, Jemima F. II.

The new craft is 35 feet longer than the second Jemima. As will be seen by the illustration above, she is schooner rigged, with clipper bow and round, overhanging stern. With the exception of a moderate-sized deck aft and a small deck forward for handling the anchor and moorings, a long deck house extends nearly her entire length. In the forward part of this deck house is the owner's stateroom, with large double brass bed in the center forward, a divan on the port and a bureau on the starboard side. A triangular closet is in each of the after corners of this stateroom. Just aft of the owner's cabin, on the starboard side, is the owner's bathroom. A door in the center of the after partition of the owner's cabin leads into a passageway on the starboard side of which are two staterooms, each fitted with a double brass bed, a closet, a bureau and a folding wash basin. On the port side of the passage are two other staterooms, similarly furnished, with a bathroom between them and connected with each and also with the passageway. The after end of the passage leads into the main saloon or dining room and is separated from it by a portiere. In the center of this, directly under the skylight, is an oval dining table, and on each side of the saloon is a buffet. Directly aft of the saloon is the galley with stove, sink and dresser. This galley is entered from the saloon by way of a large pantry containing the ice-box, a second sink and a large dish closet. Leading from the port side of the galley is a linen closet. A flight of three steps leads from the galley into the engine room, where the two six-cylinder Speedway engines of 100 horsepower each are installed. Aft of the engine room and separated from it by a bulkhead, are the crew's quarters, containing berths for six men. Partitioned off from the crew's quarters is the engineer's room, containing a berth, locker and dressing case, and forward of this are two large lockers for the crew. A passageway along the starboard side of the after end of the yacht gives access, by means of a companionway, to the after deck without passing through the service portion of the boat. The crew's entrance to the deck is by means of three steps and a door in the port side of the after end of the deck-house.

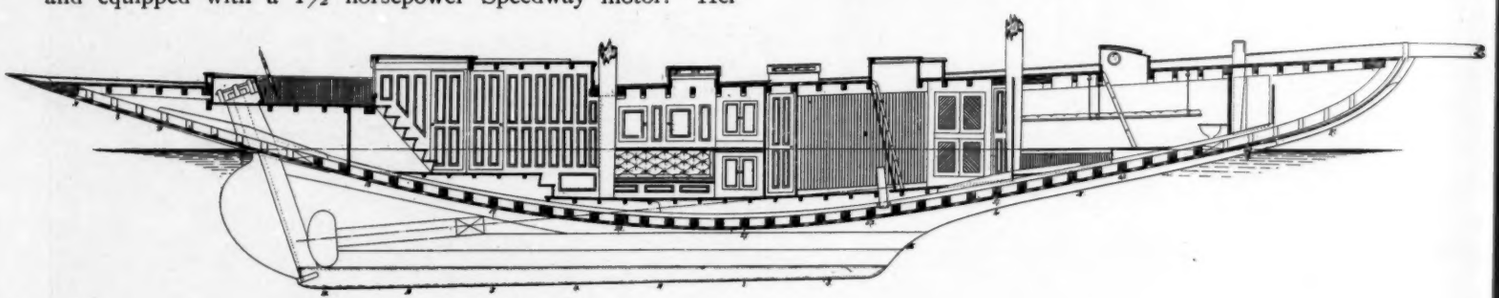


The galley is furnished with a hot water supply. A guard railing, which separates the engine from the passageway, allows the owner and guests to observe the "wheels go round" without mixing up with the machinery. A guard railing protects both forward and after deck. The former has a large electric capstan, anchor davits, and a deck plate giving access to the fuel tank, which is located underneath. A brass ladder at the forward end of the deck-house leads to the upper deck, where there is a generous amount of space forward of the pilot house, which is divided into two compartments. One of these is the pilot house



proper, with steering wheel and binnacle and two upholstered seats against the rear partition, with a large chart case between them. The after half of the pilot house is fitted up for the captain's stateroom, with a large berth, with drawers underneath, a desk and a commodious clothing closet. The lower deck-house is well lighted, the owner's cabin alone having eight large windows in drop sashes. The water supply is carried in the hold below the berth deck, and the engine room has a ventilating cowl on each side of the mainmast.

The boat will carry two power tenders, each 14 ft. in length and equipped with a 1½ horsepower Speedway motor. Her dimensions are 112 ft. over all, 91 ft. 6 in. water line, 21 ft. beam, 4 ft. draught, freeboard forward 8 ft. 3 in., freeboard amidships 5 ft., freeboard at stern 5 ft. 6 in. A peculiarity of her arrangement is that living and service quarters are all practically above deck, being situated under the long deck-house. Underneath this deck-house accommodation there is a large storage space, lighted by portholes, which contains fresh water tanks of 1,400 gallons capacity; salt water tanks for flushing closets, 400 gallons; one ton of reserve ice; storage batteries for electric lighting plant, and provisions.



The Auxiliary Schooner Witoco

THE auxiliary schooner Witoco, now the property of Charles Longstreth, who has renamed her Arawan, was built in the winter of 1904-5 at the yards of Robert Jacob on City Island, from designs by Henry J. Gielow. W. T. Colbron, for whom she was built, had peculiar ideas, or perhaps it is better to say, ideas of his own, in regard to the boat he wanted and it was the duty of Mr. Gielow to meet his views in every way.

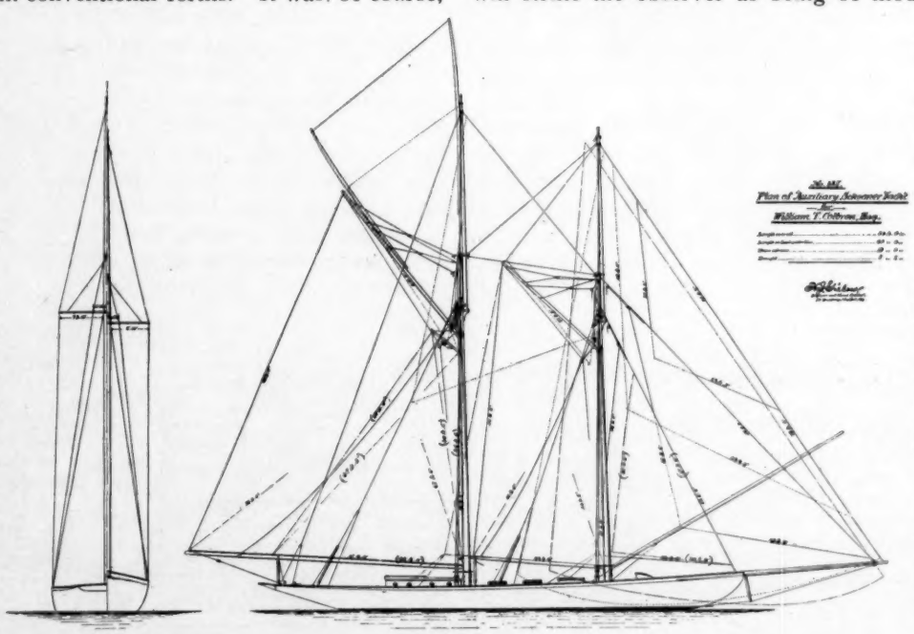
In the main it may suffice to say that the prospective owner wanted an auxiliary of about 60-foot water line, which could navigate shoal waters as well as deep. Moreover, he desired a keel boat. Now, when you come to build a keel boat for shoal waters, especially if the craft is to be at all sizable, you have to study a bit before the plan is laid out on parchment. It does not do to say that the draught shall be in such and such a proportion to other dimensions until you know just how compatible such figures will be with the intentions of the owner.

One thing is certain, such requirements involve a departure more or less radical, from conventional forms. It was, of course, impossible to say that the keel would simply be narrower, or rather, shorter, and heavier and that the hull could be as other hulls. That would have resulted in no boat at all.

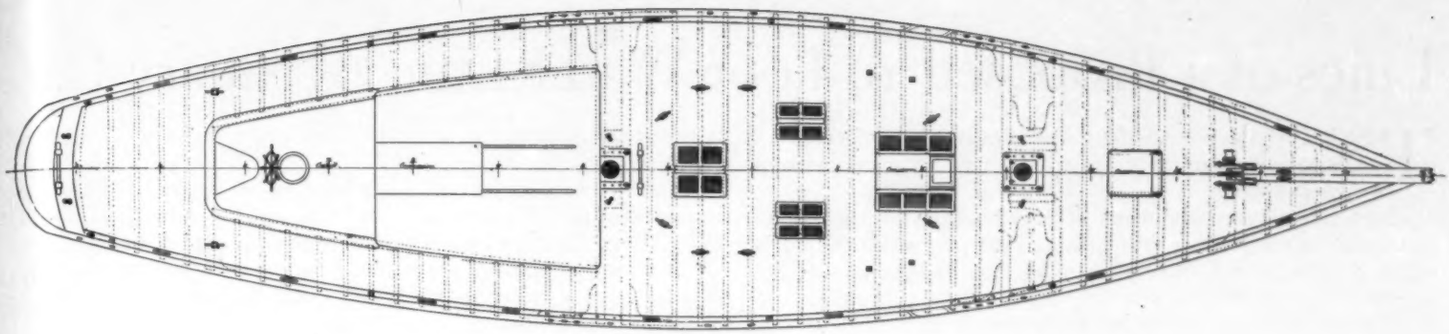
The designer, in fact, did not begin with a consideration of the keel at all. He concerned himself with the lower strake of hull planking. He dispensed with the usual hollow garboards and the fin was made much larger than had been the custom for some time. Incidentally, this admitted of very strong and substantial construction, inasmuch as it allowed the floor timbers and frames to run across the keel instead of being boxed in and keyed in the ordinary way. Viewing the hull in dry dock, one thus saw a rounded hull bearing some resemblance to a full-bodied saucer, the strakes running over the fin in unbroken lines. Simplicity and strength were strongly suggested. As has been adequately proved, the latter element was surely there. No hollow ground boat she, but one of full, strong lines and as capable in the way of speed or endurance as any boat of her type in existence —more so than a vast majority.

The shallow, long, flat keel is also something that should be noticed. It suggests weatherly qualities, particularly to windward, and it may be said, from the experience of her owner, that her qualities on the wind are extraordinary. The lead ballast consists of a shoe, in one piece, and moulded to the under side of the keel with metal bolts.

Overhangs are moderate and fairly sharp and the sail plan will strike the observer as being of moderate dimensions. The impression is that in anything of a breeze the vessel would do well against the average run of racing yachts.

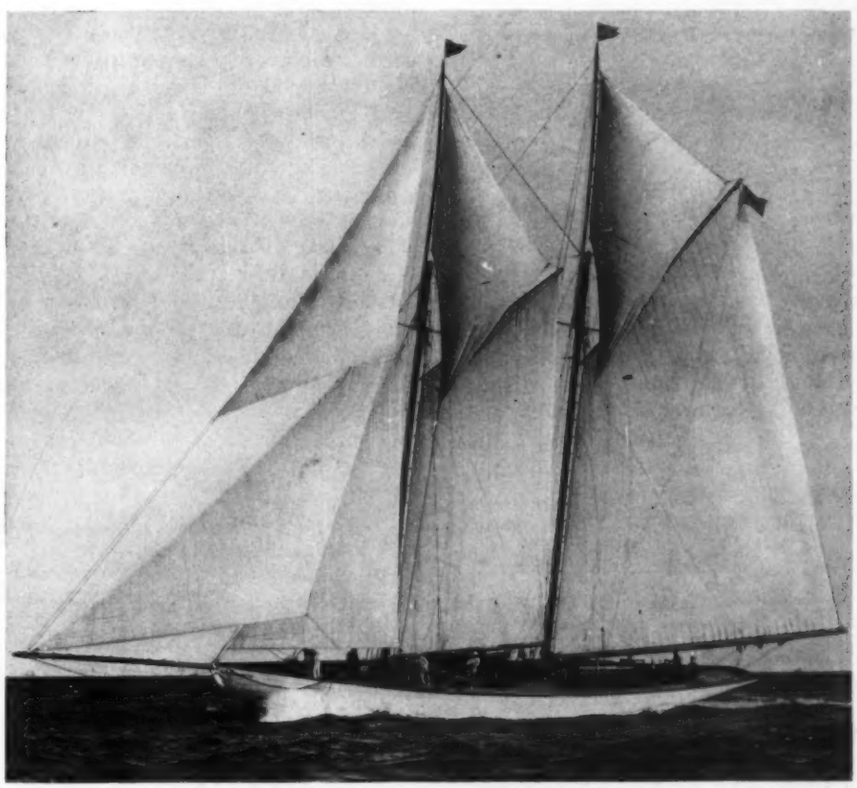


The yacht is equipped with a 3-cylinder, 4-cycle gasolene motor, with a 40-45 horsepower engine, qualified to drive her at the rate of 7.65 nautical miles an hour. The engine is well forward, giving the schooner an exceptionally long shaft, which is carried underneath the mainmast step. Spring bearings are provided at regular intervals, one being aft, in the



deadwood. The propeller is made to feather, so that when under sail there is no drag. This feathering arrangement is operated by means of a simple device, consisting of two discs, which have a movement of about thirty degrees on each other.

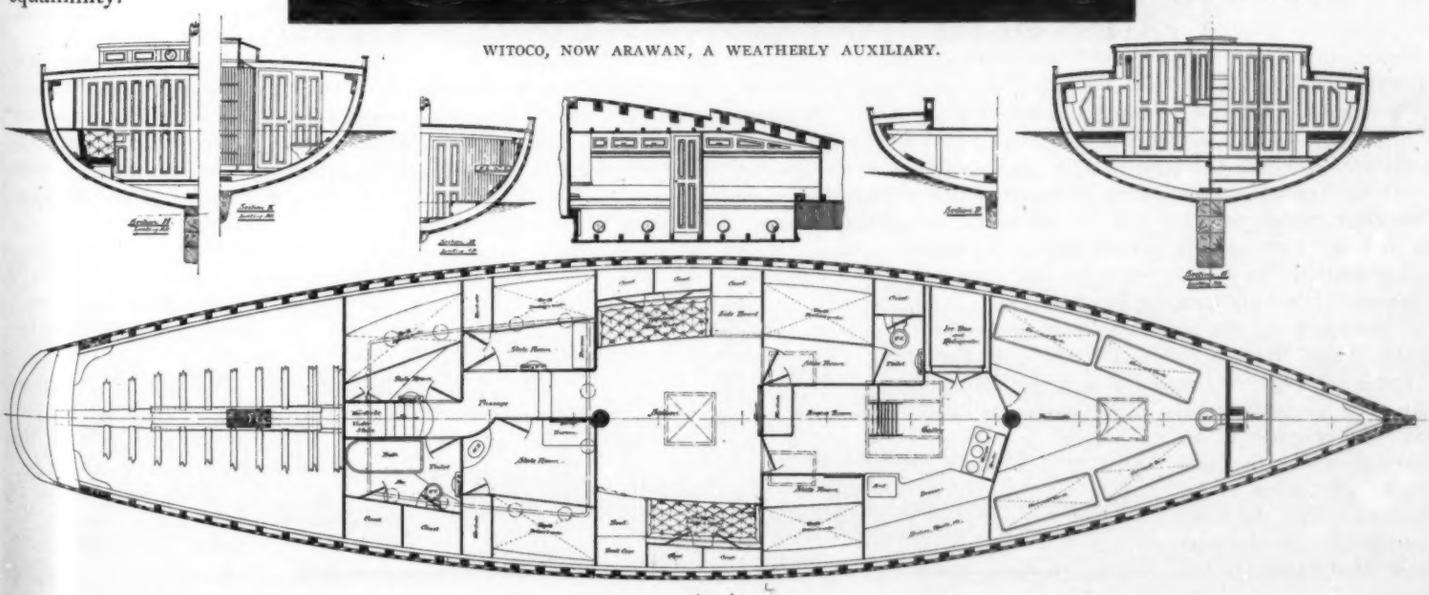
Accommodations are liberal, as may be seen from a glance at the plans. The arrangement of the lockers and the staterooms is especially convenient, and the economical disposition of space throughout indicates much cleverness. The passageway running from the saloon, which, by the way, is commodious, has staterooms on either side. There is a bathroom and also wardrobes, lockers and lounging divans. The galley is separated from the saloon by the engine room. The forecastle is large, and surely no sailor could find fault with such quarters. The sectional views afford striking impression of strength. In such a craft one might well view even the most tempestuous weather with equanimity.



An interesting method of choosing a name for this boat has been told by her former owner and may well be given as a hint to those who are at loss for suitable names for their craft. Mr. Colbron, having no one in mind for whom to christen the schooner, finally resorted to his own name. He took the first two letters of William; then the first two letters of his second name, Townsend, and finally the first two letters of his surname, and the result was Witoco. It was a good name and well befitted a good boat.

The materials of construction were all carefully selected and are the best for their respective purposes. The keel, stem and sternpost are of white oak; the frames are of selected white oak, cut with grain of wood, double framed; her planking is of yellow pine, and her fastenings are of copper, through bolts and composition spikes. Her deck structures are of mahogany, and the metal work of brass.

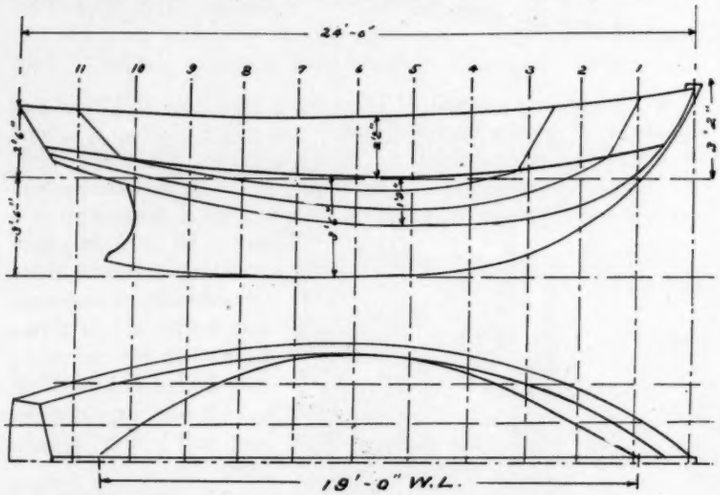
WITOCO, NOW ARAWAN, A WEATHERLY AUXILIARY.



Lines of a Proposed 19-Foot Water Line Auxiliary Cat

THERE is always something interesting to the yachtsman in lines and plans of craft which may be constructed by the amateur.

Even though one should not be in a position to do so, or the plans may be for another type of boat than that which the reader might be able to use, they always set one to figuring out how

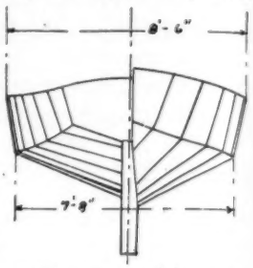


nearly they approach to what he would like or could construct.

And, although he may often pass up the particular plans illustrated as too difficult of construction by himself, or a trifle too long or short on the water line, too beamy or narrow, or too deep or shoal for his cruising grounds, plans of small craft of easy construction often start an idea which ends in a craft somewhat different but just what the reader had always wanted without knowing it.

Here, therefore, are the lines of a rather easily built 19-foot water line, keel skipjack, as worked out on paper by C. H. Dodd of Boston, Mass., whose idea has been to design a small, easily built craft, which could be handled by one man and comfortably house a party of two, and which could be used for week-end cruises or as a floating summer home of modest proportions and economical running expense.

She has an over all length of 24 feet, her beam is 8 feet 6 inches, and she draws 3 feet 6 inches of water.



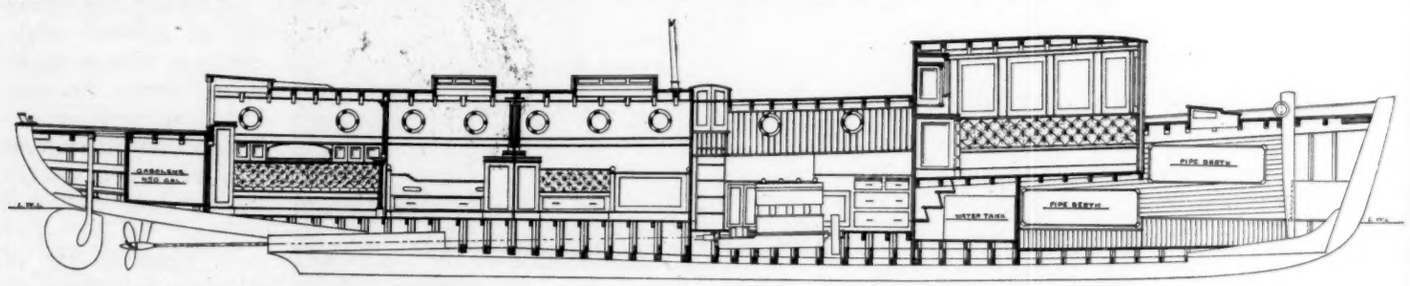
It is her designer's intention to give her a cat rig of 365 square feet area, and to equip her with a 5 horsepower single-cylinder two-cycle motor.

Her cabin is to be arranged to take care of a crew of two and to have cooking accommodations and toilet facilities.

Her construction would not be beyond the ability of an amateur skilful with tools and with some knowledge of boat building, and her cost, which would vary with the quality of material, fittings and finish, would not make much of a drain upon the finances of a couple of young fellows who wanted to build and navigate a little ship of their own.

While her freeboard, especially forward, is rather high for a sailing craft, it would prove an advantage under power and allow of more head room in her cabin.

Just how she is to be arranged, in regard to the sail plan, cabin accommodations and engine installation work, we hope to be able to show in a later issue.

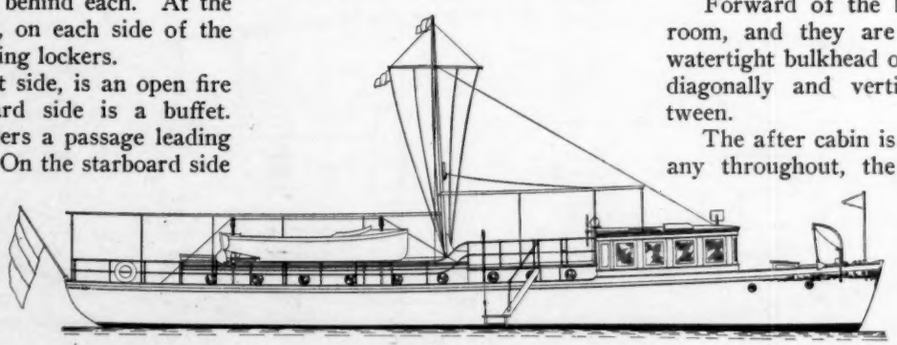


Plans of a 70-Foot Cruising Launch

SHE is of the trunk cabin type, with large pilot-house forward; her stem is nearly plumb and her stern is of the whaleboat type. The after deck is flush, is 10 feet long and under it is located the gasolene tank, which has a capacity of 450 gallons.

From the after deck a central companionway leads down into the after cabin, on each side of which are extension transoms, with lockers and alcove behind each. At the after end of the saloon, on each side of the companionway, are hanging lockers.

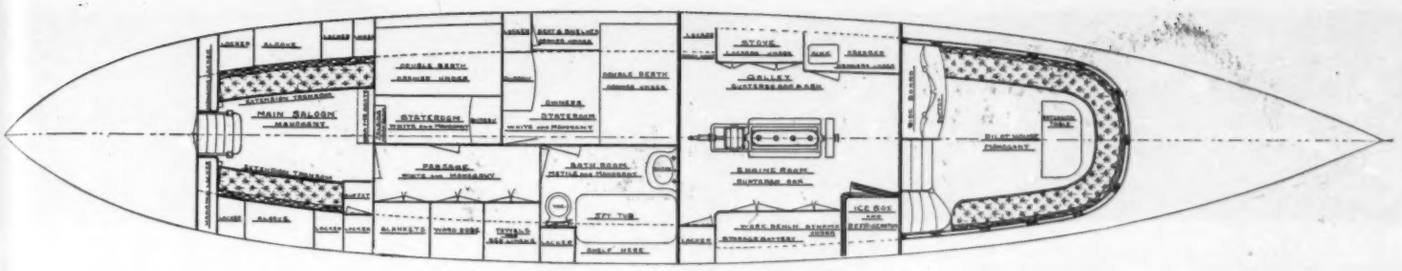
Forward, on the port side, is an open fire grate. On the starboard side is a buffet. Through a door one enters a passage leading direct to the bathroom. On the starboard side of this passage is an extension berth and two wardrobes, and lockers for bedding and linen. On the port side of the passage are two large staterooms with double berths, bureaus and washstands. The bathroom is large with plenty of room to move about it and is fitted up in the best and most modern style. Both the staterooms and the bathroom have skylights, so that ventilation is perfect. The side ports in cabin trunk have 9-inch openings and they, as well as the skylight openings, have mosquito screens.



Forward of the bathroom is the engine-room, and they are separated by a heavy watertight bulkhead of three thicknesses, built diagonally and vertically, with canvas between.

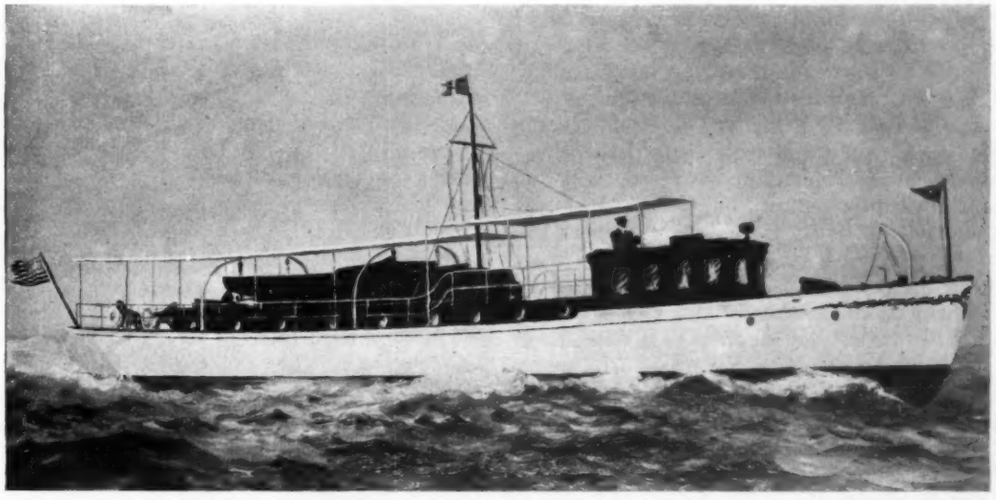
The after cabin is finished in solid mahogany throughout, the passage in white and mahogany and the bathroom in white.

This boat has a 2-foot deck space between the cabin trunk and the rail, extending



from aft forward to the engine-room, where the trunk extends all the way across from planksheer to planksheer. Here is a step that leads up to the bridge deck, which extends over the whole engine-room and galley and is 12 feet 8 inches long. At its after end a large seat extends all the way across the deck, and at the forward end is the wheel, chart table, etc. This deck is enclosed by a 30-inch high double rail and has an awning which extends well over the pilot-house. A side gangway leads right up to the bridge deck.

From the bridge there is a companionway on the starboard side of the pilot-house which leads down into the dining-room. This room is practically 12 feet x 12 feet and furnished with upholstered seats, except on after end, where there is a large sideboard, and between the sideboard and the stairway is the entrance to the galley, which is located in the forward end of the engine-room.



A 70-FOOT POWER CRUISING YACHT. SHE POSSESSES THE COMBINED ADVANTAGES OF A RAISED PILOT HOUSE, A FORWARD BRIDGE DECK AND A WELL-PROTECTED AFTER DECK.

The pilot-house is finished in mahogany throughout and has plate-glass windows, raised and lowered by weights, and at each window there is a slat blind operated by springs.

An extension table has been fitted to the forward end of house and can be extended as far as needed.

The engine-room and galley is finished in quartered oak. The engine will be of 40 horsepower, which is expected to give a speed of ten miles per hour and a steaming radius of 900 miles on her fuel capacity.

There is an independent electric light engine, with storage batteries, so the boat is electrically lighted throughout, even to the running lights.

The entrance to the engine-room is on the port side, and in the forecastle there are accommodations for four men

Fresh water tanks located under the after end of the pilot-house have a capacity of 600 gallons.

Decks are of white pine, in narrow strips laid double, with heavy canvas between, and well painted to insure absolute tightness.

Cabin trunk, pilot-house, planksheer and all deck trimmings are of East India teak. Throughout, the boat is built of the very best material procurable, everything being selected stock, and special care having been taken to get a strong, seaworthy and able craft.

She carries a 16-foot tender with 7 horsepower engine on her starboard davits, and a 14-foot dinghy on the port davits.

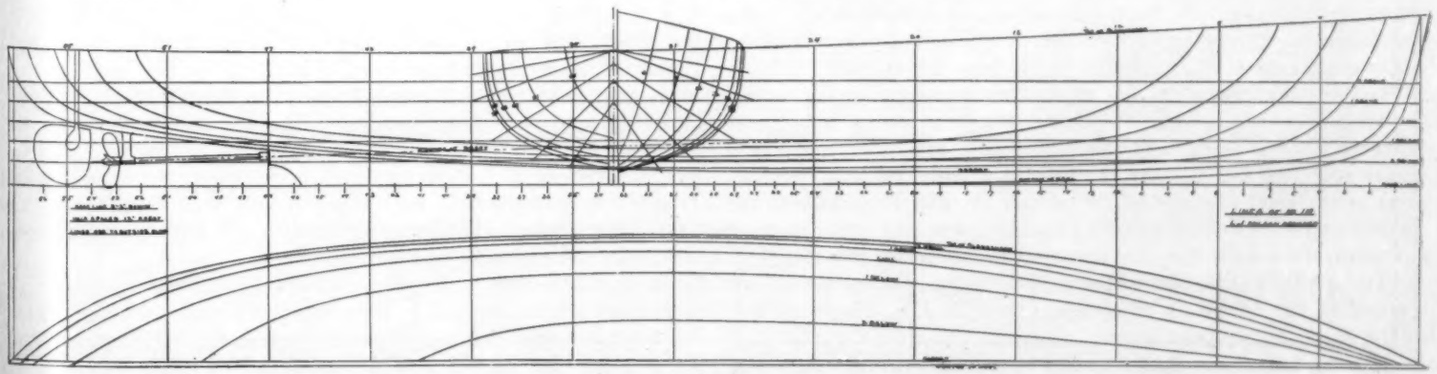
The dimensions are: 70 feet over all, 14 feet beam, 3 feet draft.

There are sleeping accommodations for nine persons in the owner's party, if two sleep in the pilot-house.

The cruiser will be used in northern waters during the summer and on the Florida coast in the winter.

She was designed by the Nilson Yacht Building Co. of Baltimore, Md., and represents a particularly interesting type of the long-distance sea-going gasolene-powered cruiser, containing all the comforts and conveniences usually supposed to be obtainable only aboard craft of much greater dimensions, and which, until comparatively recently were confined to steam-powered vessels of more than moderate size.

The name of the owner will not be announced till the boat goes into commission.



EDITORIAL

Published by the Yachting Publishing Co.; Oswald Garrison Villard, President; Robert M. McBride, Secretary and Treasurer.

Getting Ready. When this number comes to hand the mind of the yachtsman will have lightly turned to thoughts of his boat. She, of course, demands a world of attention. An active season followed by a long winter's rest gives one a radically different craft from the trim, staunch, well-groomed boat in which you won cups or cruised to pleasant places in the months gone by. But this, of course, is expected; your true yachtsman would, we dare say, be somewhat disappointed if there were not more or less to do in the way of preparation for the approaching summer. There is a world of poetry in the first journey to the yard where the boat is lying, with the golden hints of spring sunshine all about, the tangy odors of warm earth, the rattle of riveters' drills, and of hammers, the creaking of the ways as a yacht glides into her natural element—all the sights and sounds, in fact, inevitably associated with the spring awakening of shipyard industry. Then, as the canvas covers which have protected the craft from winter's rigors are stripped off and everything is laid bare, how blithely, with what scrutinizing care, with what scientific ardor you proceed from garboards to sheer, from deck to masthead, noting things to be done, improvements to be made, new appliances to be fitted. Thereafter, no idle hours are permitted. Saturday afternoons, holidays, half days snatched from the office schedule are all filled with the work of preparing the craft to go into commission. "Puttering aboard the boat," the landsmen say, enviously, we doubt not, and with good reason, for if a man ever retires unto himself, marking not the diversions of his friends, nor the general trend of the world and its affairs, it is when he begins to "putter" about his yacht. It is wholly absorbing, eminently delightful, and when all is ready, when there remains nothing more to be done, a void exists in the boat owner's life until such time as the fresh warm breezes and the sparkling waters call with irresistible potency. This is going to be a good season, 1908, a season of the small boat, a season of cruising, and to our power boat brethren we extend congratulations upon the prospect for the best season in every way that this branch of the sport has ever known.

A Question of Knowledge. We are rather inclined to hold a brief for the members of the Executive Committee of the American Power Boat Association in regard to the failure of that organization to approve the amendments recommended in the matter of the classification of boats and formula for calculating the horsepower of engines. If those who voted against the changes had taken the trouble to have worked out the new formula, particularly in regard to the rating of horsepower, it is safe to say that action would have been different. As it is, it seems probable that the Executive Committee will do nothing more than again submit the recommendations at the next meeting of the organization. The changes are needed, and as several men of high technical ability stand sponsor for them, the sooner they are adopted the better for the sport.

The merits of the formula are obvious, as may be seen from a study of the following amendment to Rule III, sub-division 4, of the rules of the Association:

"In engines of less than 6 inches stroke the formula should be $\frac{A \times N \times K}{C}$, S being stroke measured in feet.

"The constant in automobile racing boats shall be 2 for four-cycle engines, 1.65 for two-cycle engines having six inches stroke or over, and in engines having less than six inches stroke of piston, the constant for four-cycle engines shall be 1, and for two-cycle, .85."

Formerly, the number of revolutions per minute was the factor used in calculating horsepower, and this did very well and might have continued indefinitely to the satisfaction of everyone, had not owners, afflicted with that failing common to some yachtsmen, known as cup greed, devised schemes of misrepresenting the number of revolutions. This was such a simple way of gaining an advantage, that it became quite a common practice. The result was that the number of revolltions submitted by owners or engineers became so unreliable as to defeat the intent and purposes of the rule. As an instance of this, it may be said that there have been cases where two engines of the same size and make were often 40 per cent. apart in horsepower rating on basis of figures returned to the Racing Committee by men who probably would have scorned to steal money, but had no compunctions about lying in regard to their engines.

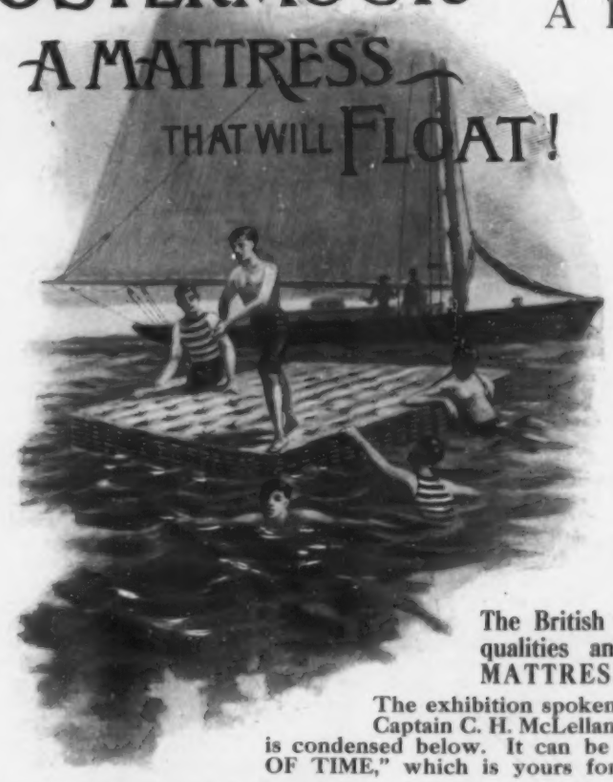
Some sort of a change was of course inevitable if racing was to be conducted on a fair basis. And so it was decided to fix the piston speed arbitrarily at 1,000 feet per minute—that is, an engine with a six-inch stroke and running 1,000 revolutions would have the same piston speed as another engine of twelve-inch stroke running 500 revolutions. A piston speed of 1,000 feet per minute was adopted, as practice had shown that this was the limit of effective piston speed for gasolene engines. Furthermore, it was found extremely difficult to design a propeller that would do effective work at a greater number of revolutions than 1,000 revolutions per minute.

When these facts were taken into consideration, it was apparent that very short stroke engines would be laboring under a handicap. In order to equalize this, the amendment shown above was proposed. As has been said, none of the framers was present, but someone who considered his ideas superior asserted that with the constant of 2 for 4-cycle engines over 6 inches and another constant of 1 for engines under 6-inch stroke, the relative rating of two engines, one being an eighth of an inch above 6-inch stroke and the other one-eighth of an inch below the 6-inch stroke, would be more than two to one. That is to say, the engine having a 5⅞-inch stroke would rate less than half the horsepower of an engine having a 6⅛-inch stroke. Now had this critic taken the trouble to have got hold of two engines and tried out the formula, he would have demonstrated to his own satisfaction that it would work out just as intended and not as he supposed. In other words, if an engine rating 6 inches or over figured up to a capacity of 10 horsepower, the same engine reduced to a stroke of 5⅛ inches would, under the proposed amendment, rate 9.79 horsepower, and not 5 horsepower as contended by the opponent of the amendment.

In another sense, however, the protest against the acceptance of the report might be taken as an indication that the average motor boatman is beginning to go into the intricacies of the sport and learn things for himself. This makes for ultimate good.

OSTERMOOR

A MATTRESS THAT WILL FLOAT!



A LIFE-GIVER in the BERTH
A LIFE-SAVER in the WATER

This illustration represents an actual occurrence in the New York Harbor, where an

OSTERMOOR MATTRESS

was thrown overboard and used by boys as a bathing raft. Every ounce of Ostermoor is soft as down and as buoyant as cork, and makes

A Delightful Bed or a Restful Cushion and a Tried and Tested Life-Preserver Beside

The British Government made an exhaustive test of the buoyant qualities and life-preserving reliability of the OSTERMOOR MATTRESS at Hyde Park, London, England.

The exhibition spoken of was made by the United States Life-Saving Service, Captain C. H. McLellan, Inspector, in charge. Part of Captain McLellan's report is condensed below. It can be read in full on page 82 of our Catalog, the "TEST OF TIME," which is yours for the asking.

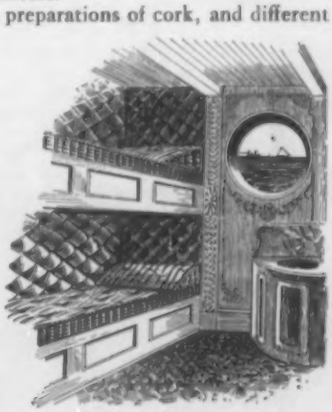
While in charge of the United States Life-Saving Service exhibit at the International Fisheries Exhibition, held in London in the year 1882, a much soiled and torn mattress was sent to my exhibit from the United States National Museum, it having been entered as a life-saving appliance for fishing vessels. (Adopted and used exclusively by Commission of Fish and Fisheries.)

I learned that it was an Ostermoor Mattress which had the previous year been awarded a medal at Berlin, returned to the United States National Museum in Washington with other exhibits and stored there until preparations were made for the Fisheries Exhibition, when it was, by order of Prof. Spencer Baird, shipped to London. On account of its soiled and torn condition, it was not given a very prominent position in my exhibit, and I am free to confess I took but little interest in it.

As it was an American article, entered for competition, it was taken with other exhibits to the lake in Hyde Park on the day the practical tests of life-saving appliances were made. Being a member of the jury on life-saving devices, I took an active part in the tests. The jury was composed of two Admirals, one Captain, and one Commander of the English Navy; a Commander of the French Navy, a Captain of the Spanish Navy, a Lieutenant of the U. S. Revenue Cutter Service. The jury made very thorough tests, and the decisions were impartial and never questioned by the exhibitors.

There were entered for competition mattresses of all descriptions and materials; various preparations of cork, and different shapes and designs of rubber. One in particular, of which much was expected, was a combination of several inflated rubber cylinders.

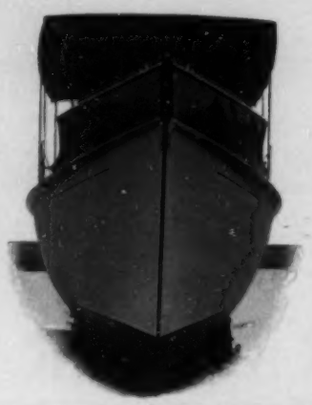
The Ostermoor was the last on the list to be tested, which gave it a better opportunity to show its superiority. Its predecessors all failed in one particular: that when a man attempted to climb from the water upon them, the opposite side invariably tipped up, which made it impossible to get on unless a man was on the opposite side to hold them down. Much to my surprise and satisfaction, when the Ostermoor Mattress was placed in the water, it showed greater buoyancy, and the men had no difficulty in getting upon it—several on one side even, it remaining flat and firm in the water. Nine men were easily supported upon and around it.



"Ostermoor" means Restful Sleep aboard ship on a Life-Preserver Mattress that does not absorb dampness, will not mildew or decay, does not smell, is vermin proof and never needs re-making.

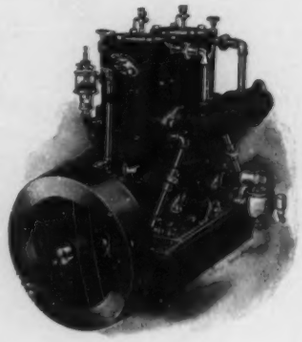
Send for "The Test of Time," a handsome booklet that tells the whole story by word and picture and will absolutely convince you of the truth of every Ostermoor claim.

OSTERMOOR & CO. : 205 Elizabeth Street : NEW YORK



MOTOR BOAT SUPPLEMENT

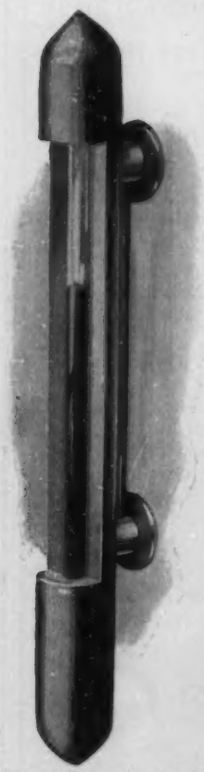
New Ideas in Craft, Engines and Accessories



A Gasolene Supply Indicator Just how much gasolene is in the tank is a question of consuming importance.

It is not always convenient, nor considered the best practice, to jab a stick down the supply pipe and thereby ascertain just what is the state of the tide within the tank.

In order that the motor boatman may always know how much fuel he has aboard, an air pressure tank gauge, of which we show an illustration herewith, has been brought out by the Beloit Supply Company of Beloit, Wisconsin. This gauge may be fixed on the bulkhead of a boat, either above or below the tank level and at either side. It is placed in a perpendicular position and connection is made by a flexible copper tube, which enters the tank from the top and extends to within about a half-inch of the bottom.



Glass indicator for showing depth of gasolene in fuel tank. This indicator may be installed on bulkhead either above or below tank level.

As the supply of gasolene rises it forces the air in the tube upward and into the bulb of the gauge, where the pressure thus made forces the liquid in the gauge upward in direct proportion to the depth of the gasolene.

Inversely, the liquid in the gauge recedes as the fuel supply diminishes. Connection to the tank is made from the back and there is nothing in sight but the gauge as shown in the illustration. The gauge in itself is about six inches in height and neat and ornamental in appearance.

A 21-Foot Cabin Cruiser. Although the mere statement of the dimensions of the Bath Marine Construction Company's 21 feet by 6 feet 2 inches cabin cruiser would lead one to believe that very little accommodation could be obtained, the actual boat contradicts this opinion. The boat is arranged with a roomy passenger cockpit aft, the seats running fore and aft, with lockers underneath. There is no seat at the after end and the coaming here has been cut down so that a person may sit on the after deck and steer by the tiller, provision having been made for steering either this way or by the wheel, which is placed on the port after side of the house. In connection with the steering arrangement, it is noteworthy that everything has been done to simplify and make as accessible as possible this vital part of a boat's gear. The rudder is of oak, brass bound, hung on outside of stern, so that it may be got at easily, and brings the propeller farther aft, where it is easy to get at in case of its becoming foul of lines or drift and makes the rake of shaft less. The rudder is provided with a brass tiller, having eyes for the rope, which is led through brass sheaves and along the deck and through the coaming to the steering-wheel drum. This drum is placed on the outside of the house, so it can be watched. The wheel is placed far enough from the bulkhead to bring it within reach of the steersman, when he is seated as well as when standing.

The arrangement of the engine compartment is probably the most original part of the whole design. The engine is located below a low seat that forms the boundary of the passenger cockpit. This is composed of panels, so as to be entirely removable. Forward of the seat is a sliding hatch, which serves the double purpose of giving easy access to the cabin and providing a well for cranking the engine. On either side of the low seat are high ones, that on the port side being for the use of the steersman. Under this is located a tool locker, and in a compartment below entered from the engine compartment is a space for the batteries and spark coil. On the starboard side, under the high seat, is located the gasolene tank, easily accessible.

The cockpit floor is high, so the view forward is not entirely cut off by the cabin, as is often the case in boats of this class.

A cabin, 10 feet long, is entered by double hinged doors at the after end and has 5 feet headroom and contains two broad transoms, 6 ft. 3 in. long, with lockers underneath. At the forward end is a large locker, with a shelf above it.

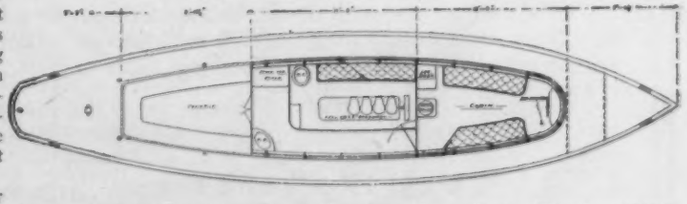
Importance of Safety. Motor boat users everywhere are taking an active interest in the Roper Safety Propeller, which the makers claim solves the problem of perfect motor boat control.

With this propeller the boat can be sent at any speed, ahead or astern, slowed down, reversed, stopped, or started again in either direction, all in an instant, without racking the boat or racing or throttling the engine. The Roper Propeller prevents the engine from racing. It is all a matter of the easy manipulation of but one simple lever.

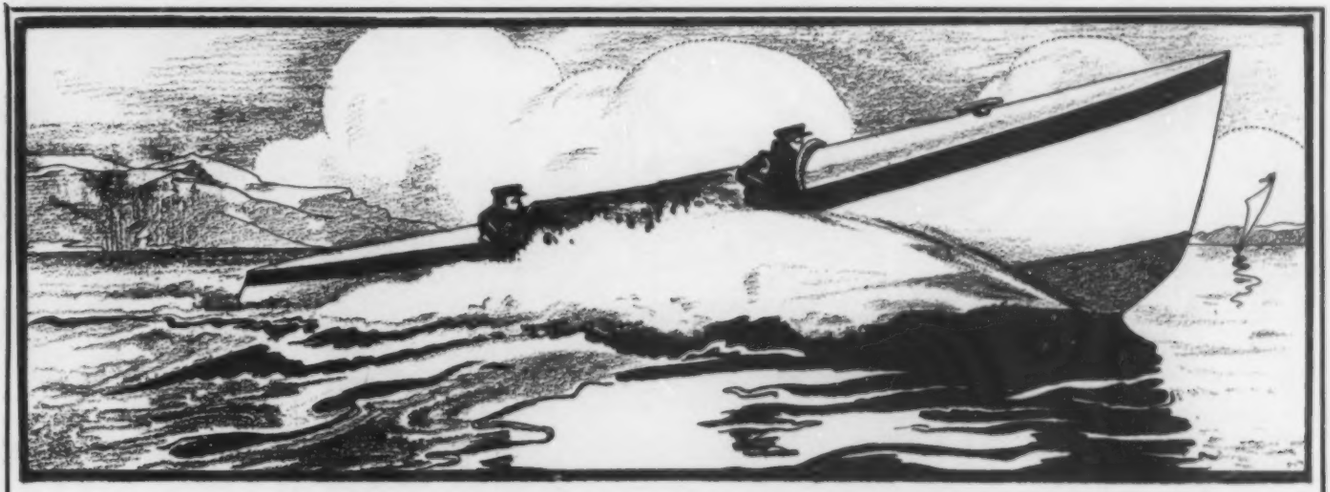
There are four blades to this propeller, set in pairs tandem on the hub and so adjusted that they may be made to counteract or re-enforce each other at the will of the boatman while passing through the water and revolving steadily at the same speed. It is this adjustability of the blades which makes such remarkable results possible.

Messrs. C. F. Roper & Co. of Hopedale, Mass., are the inventors and sole manufacturers of this propeller. They have many testimonials from disinterested parties by whom it has been tested to the utmost, and these men write that it makes any motor boat positively controllable to the instant, at all times and under all circumstances.

Two Police Department Motor Boats. There have recently been completed at the works of the Gas Engine & Power Company and Charles L. Seabury & Company, Consolidated, Morris Heights, New York City, two gasolene launches known as "A" and "B," for the Police Department of New York City, for harbor service. These boats are from a design of Horace See (which is shown herewith), and are 44 feet 7 inches long over all and about 10 feet 6 inches beam. The hulls have been very substantially and strongly constructed. The keel, stem, sternpost, shaft log, frames and floors are of best white oak. The planking is in long and narrow streaks of white cedar. The garboard is of yellow pine and the top streaks of oak, all thoroughly fastened by copper nails, rivetted over heads of burrs, and the ends with brass screws. All fastenings are counterbored and plugged. The shear streak and plankshеer are of white oak, while the clamps and shelf are of the best yellow pine. The deck, fore and aft, also either side of the hull is of white pine, laid in narrow strips, and covered with canvas. The cockpit is of white pine, of the self-bailing type, with scuppers to drain overboard. In the pilot-house are seats with lockers on either side. The steering wheel is in the forward end and the motor is also



Accommodation plan of the new Police Department Power Boats. They demonstrate how comfort may be combined with a thoroughly practical businesslike interior.



We Can Deliver a Pierce Power Boat IN THE WATER Anywhere Near New York Within 24 Hours of Receiving Order

¶ All the models are exhibited in our big Sporting Goods Store, Third Floor. Duplicates are in stock, ready for immediate delivery. We deliver IN THE WATER, when desired, anywhere in the vicinity of New York City at no extra cost.

¶ Pierce Power Boats from $275 upward—fully equipped. The "Siegel Cooper Special" launch; built especially for New York waters; big, powerful, fast and safe, fully equipped, **$495.**

¶ Fishing tackle, shot guns, rifles—every variety of sporting goods—at prices that average a third lower than the usual figures of specialty shops. Nothing but standard makes carried.

¶ Everything you can want for fitting out your cabin or galley. Curtains, rugs, linoleums, cushions, bedding, mattresses, gasolene and kerosene stoves, cooking utensils, china and glassware.

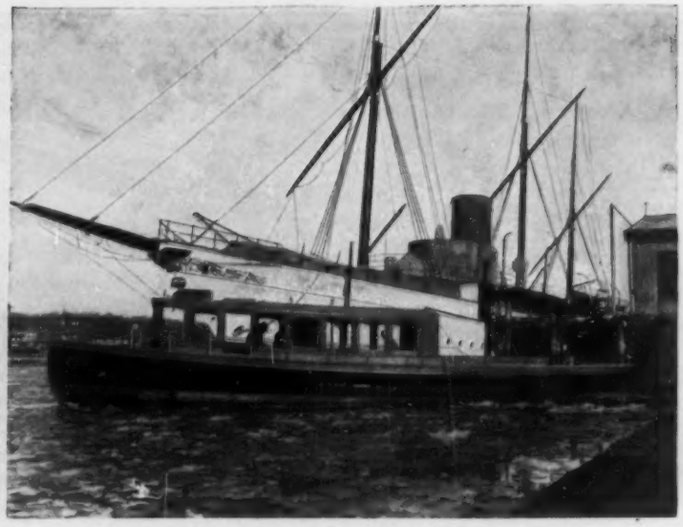
AND EVERYTHING THAT'S FIT TO EAT

¶ Our Grocery Store will take care of your pantry wants. Nothing but pure foods are sold; always fresh and reliable. Lowest prices (for pure foods) in America, as everybody knows. Free deliveries practically everywhere between Norfolk, Va. and Eastport, Maine, on grocery orders of $5 or over.

SIEGEL COOPER CO.

SIXTH AVENUE
18th to 19th STREET

controlled from this point. On the port side is a desk and in the center of the cabin, at the after end of same, is a water cooler. On the starboard side is a door opening into the motor compartment. The cockpit is covered by a canvas awning on pipe frame. A heavy towpost is on the after deck. There is a hand rail on the roof of the cabin, as well as a rail on the deck at either side of cabin. The hull below water line is sheathed with copper, and all outboard fittings are of brass or bronze. The motive power consists of a 4-cylinder 65 horsepower "Speedway" motor, capable of a speed of 13 miles per hour. They are very able and powerful-looking launches and will undoubtedly prove serviceable in the work for which they are intended. The same company will shortly start construction of two more launches for the Police Department, to be duplicates of "A" and "B." This will bring the Department fleet up to a truly modern state of efficiency.



Power boat built for the New York Police Department by the Gas Engine and Power Company and Chas. L. Seabury & Co., Consolidated.

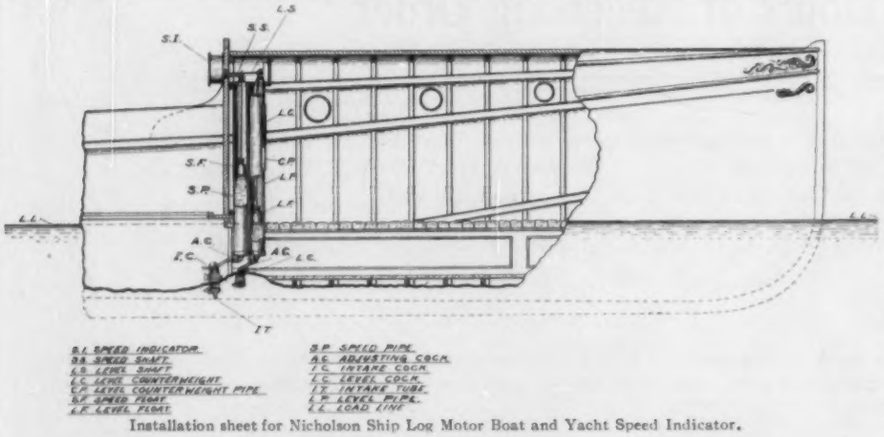
How Fast Is She Going? We illustrate herewith a speed indicator which can be applied or used on any character of power or sailing craft of low freeboard. This instrument, we are advised, has been thoroughly tested and has proved beyond a doubt that it is capable of performing all the functions required of it and will instantly and steadily indicate every change of speed, and without any vibration in the needle, and will no doubt fill a long-felt want among every class of yachtsmen.

This indicator can be installed either in the cockpit cabin or on deck and begins to operate as soon as the boat gets under way.

The method of installation and the apparatus itself are wonderfully simple when the results obtained are considered. The sea connection is a ¾-inch seacock, through which a ⅜-inch brass tube projects about ½ inch through the bottom or skin of the boat. This projection or intake tube is plugged at the bottom, with a hole on the forward side, which acts as a scoop and forces the water up into a float pipe, as the water rises in the pipe the float therein rises and falls with the varying head of water and operates the indicator. In order to overcome any vibration in the indicator, due to change of load line or pitching in a seaway, the level float or equalizer L. F. is introduced. The sea connection of the equalizer consists of a ⅜-inch seacock, which is placed flush with the skin of the ship, the float in the equalizer pipe always rides at the load line and counteracts any vibration in the indicator.

It does not measure the revolutions of the shaft, for which, under different conditions, there is a varying amount of slippage which must be calculated. Neither has it any electrical connections.

This speed indicator shows instantly just how fast the boat is going through the water at the moment, and this is what every skipper and boat owner desires to know. It is made for any speed and to read in either knots or miles per hour. It is one of the products of the Nicholson Ship Log Co., of whom the Eastern agents are Barrett & Lawrence, 662 Bullitt Building, Philadelphia, Pa.



Installation sheet for Nicholson Ship Log Motor Boat and Yacht Speed Indicator.

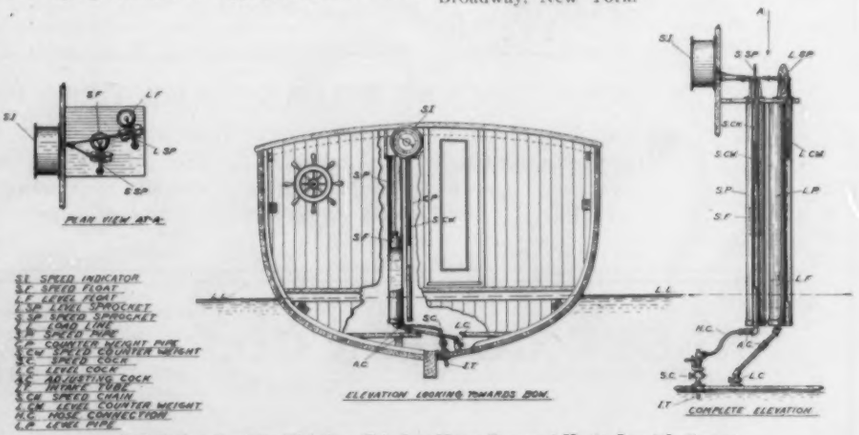
An Interchangeable Yacht or Ship's Gun One can never tell when the Regatta Committee may decide to "commandeer" one's boat for an official vessel in timing, starting or carrying dispatches. At the larger races, such designated boats fly the flag of the U. S. Revenue cutters and vie with them in their spick-and-span shipshape appearance.

A cannon for use on shipboard must be designed so as to admit of easy mounting, handling and stowing. The new bronze interchangeable mount yacht guns are made so that the carriage and gun are separate and self-contained each in itself, thus the gun slips into a socket in the carriage and one or both can be instantly unshipped and stowed below when necessary.

By this new method of construction, several styles of mounts are available and suitable for any type of boat and any position on board, whether forward, aft, amidship or on the bridge.

The same gun can be mounted on a field carriage for the club house lawn, and then, just as easily and conveniently, can be slipped instantly out of its socket, carried on board and put in place ready for immediate use. All sizes, for launch or ship signal, or throwing life lines, are made by the Naval Company.

The low pedestal mount or rail socket makes it especially convenient on a sail yacht, for there is nothing in the way to be fouled. The operating and breech mechanism are of the simplest and most durable construction, without any springs or delicate firing devices for gravity, as a strong pull on the lanyard replaces these unsatisfactory functions found on former cannon. One can be sure of getting the right thing in yacht guns when purchasing a B. & H., which in several styles, together with shells, supplies for all makes of yacht cannon, can be found at the Naval Company, 126 Liberty Street, just off Broadway, New York.



Installation sheet for Nicholson Ship Log Motor Boat and Yacht Speed Indicator.

HIGGINS & SEITER

Largest Dealers in America in Fine China and Cut Glass

Specialists in Supplying Table Services for Yachts

A HIGHLY important feature of our business is the equipment of yachts with China, Glass and Silver Services, and hundreds of well-known yachts including craft familiar to both American and foreign waters have taken advantage of our facilities. A list of these will be gladly furnished.

We will submit a sample plate and tumbler decorated with colors, signals or monogram, to any intending purchaser of a yacht table service. This entails no expense or obligation to purchase.

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We also make all kinds of bronze fittings, fog bells, etc.

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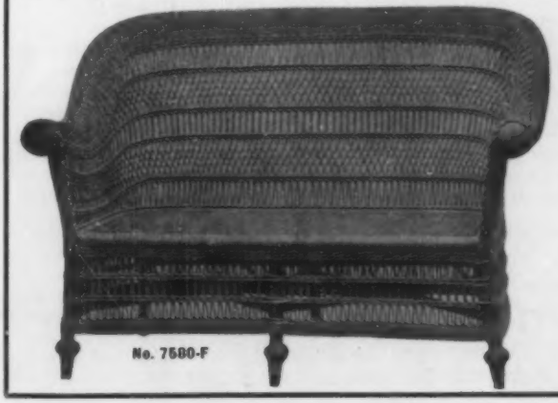

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Build Your Own Boat

BY THE Brooks System

I can sell you a boat for one-fourth of what a factory would charge.

I will sell you 100 cents' worth of actual value and results for 25 cents. Is it worth considering?

I cannot tell you my whole story here, but if you will send for my catalogues they will prove what I claim. Give me a chance—right now, today. Read my guarantee—it means you take no risk.

MY GUARANTEE

Whether you buy boats, patterns, knock-down frames, engines or knock-down furniture of me, I absolutely guarantee that you will be satisfied. I will instantly refund your money if you are not. I stand back of every statement in this advertisement. I have made them as strong and convincing as I know how. The goods warrant it.

C. C. Brooks.

You Can Save Three-Fourths

I have revolutionized the boat-build.ng business. I have spent the last twenty-two years in building or sailing boats, and am a practical boat man.

Seven years ago I originated the Pattern System of boat-building. To-day my customers are found in every civilized country on earth.

Over 50,000 boats (more than the combined output of all boat factories) have been built from my system, mostly by inexperienced men and boys.

Over half of these have built several boats—a large number have established themselves in the boat-building business.

Boat Patterns, $1.50 and Up

Anyone can build a boat by using my exact size printed paper patterns and illustrated instruction sheets, telling how to do every little detail. *You cannot fail* to build as good a boat as the professional boat-builder.

A SET-UP FRAME

A SEMI-SPEED MODEL

My boat catalogue shows all kinds of boats, tells why the patterns cannot fail to be right, and why anyone can build a boat from them.

Knock-Down Boat Frames

Many people prefer to buy my knock-down frames (all ready to put together) for their boats, instead of working up the rough lumber.

Owing to my immense factory facilities, I can in many cases supply knock-down frames in clear, seasoned oak, *at a lower price* than you would pay for suitable raw material.

Every piece of knock-down frame is accurately shaped and machined, ready to put together.

Length, 22 ft. Beam 56½ in. Price of K. D. Frame and Patterns **$24.00**. Our 6 H. P. Single Cylinder, Type D Motor, with Complete Marine and Electrical Equipment **$95.00**. Both Frame and Motor **$108.00**. Price of complete Boat, Motor installed, ready to run **$230.00**.

Special Bargain Offer

This boat (No. 233) is 15½ feet long and has 48-inch beam and 36-inch depth at bow.

It has a crowning deck forward, and as seen by illustration, is every inch a launch, not a row boat masquerading as one.

The frame is clear white oak and the planking is cypress strips ⅝ inch thick, with our hollow and round seams, edge nailed, all fastenings and iron work galvanized for salt water.

LAUNCH NO. 233

Fittings are two cleats, two flagstaff sockets, tank plate, all polished brass; 5-gallon galvanized tank, lead piping, rudder, rudder port, tiller, tiller rope, fairleaders and outboard shaft support. (1) Price of patterns $3.00. (2) Price of complete knock-down frames with patterns and instructions to finish, $12.00. (3) Price of complete knock-down body, consisting of all the above, with planking, decking, coaming (hardware and fitings included, $33.85.

Price of the finished boat complete, ready to install engine, $75.00.

Combination price of knock-down frame and 3 h. p. Type "E" engine with outfit as described in special engine offer, $70.00.

Combination price complete knock-down boat as described, for $34.35; (same engine outfit), $90.

Price of complete launch, to include all of the above, also three coats white lead paint on outside, interior decks finished with spar varnish, with engine installed, all ready to run, $125.00.

SPECIAL ENGINE OFFER

Type "E" $65.00 Weighs 58 lbs.

Here is an engine I know is all right. "The Brooks Special" has a copper water-jacket, and complete marine and electrical equipment. Ready to install. 3 h. p. Will supply this engine together with special 15½ foot K. D. launch frame No. 233 built especially for it for **$70.00**. Don't buy before you investigate this. Send for my engine catalogue—it's free. Save money by getting our special low combination prices on all sizes of engines and frames when bought together.

I also send *free* the patterns and complete illustrated instructions needed to finish the boat. *I can save you* (1) *boat-builder's profit*, (2) *labor expense*, (3) *big selling expense*, (4) *seven-eighths freight*. You can figure this out yourself.

Write me personally for my boat, engine or furniture catalogue, whichever you want. Sent free.

C. C. BROOKS, Prest., BROOKS BOAT MAN'F'G CO.

(Originators of Pattern-System of Boat-Building)

2703 SHIP STREET, SAGINAW, MICH., U. S. A.

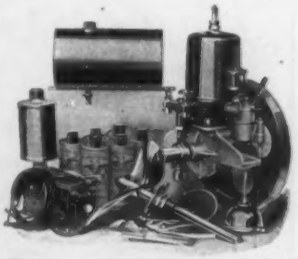
A Prospect of Brighter Things. There is much to keep clean and bright on a well equipped boat, and chamois is undoubtedly the best thing with which to do the rubbing, therefore we are glad to advise that chamois made up from the clippings of the best oil-tanned skin may now be obtained, sewed on a flexible back, conforming to the shape of the hand and the article being rubbed.

This new form of rubbing material may be used as a sponge or chamois for wet or dry cleaning and polishing. There is as much or more material as in any whole chamois and yet one can have half-a-dozen of these "Rubs" aboard the boat for the price of one whole skin. These are the product of the Twentieth Century M'f'g. Co. of New York City.

Canoe and Small Boat Engine Equipments. At the Chicago Show the Waterman Marine Motor Company of Detroit, Mich., exhibited a 6-horsepower double-cylinder of the Kowalsky type, a 4-cylinder Waterman 8 to 10 horsepower with case and spun copper water-jacket. They also showed a 2-horsepower outboard motor, built for attachment to any row or sail boat, by means of hanging the entire outfit on the rudder braces, in the place of the ordinary rudder.

Waterman Outboard Motor This motor is for attachment to the stern of row or small sail boat, when power propulsion is desired.

The engine itself is, in fact, a rudder, as it may be swung from port to starboard or vice versa, by means of the tiller to which it is attached. The gasolene tank is attached to the tiller and the whole outfit is practically self-contained and may be carried around the country by the owner if desired. The Waterman Company also exhibited a 16-foot Morris canoe, which is equipped with a single cylinder 2-horsepower motor and weighs but 36 pounds, is guaranteed to turn an 11-inch propeller wheel one thousand revolutions a minute. This motor was built for use in canoes and light rowboats, where but little weight may be accommodated and small space of installation is a necessity. This motor, of the three port type, with copper-jacketed cylinder was installed just forward of the after-thwart in the canoe.



Waterman 2-H. P. 2-cycle canoe mot o and equipment. This is a three-port engine designed for use in small craft or as an air or water pumping auxiliary.

The gasolene tank was located under the after-deck, the batteries and electrical equipment underneath the after-thwart, while the exhaust went directly through the side of the craft just abeam of the motor. In order to install the propelling mechanism, a shaft log was bolted on to the keel extending from the engine bed almost to the stern post.

BRIDGEPORT BRONZE PAINT

OUR FAMOUS STAMP

"We guarantee to refund the amount of this bill if at the end of the season there is any sea growth on the bottom of the boat, on which two coats of our B. B. Paint have been properly applied."

The American Lacquer Co.

THIS MEANS *that when you have applied our Bridgeport Bronze Paint thoroughly on the bottom of your yacht in March or April, that in October you will find the paint still free from any sea growth, and you will not have had to haul out for a single day for scrubbing off or re-painting same.*

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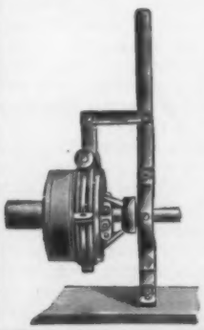

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FOUR SIZES CARRIED IN STOCK.

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Special Gear for Power Boats

ONE MAN CAN, WITH PERFECT EASE, LAUNCH A TENDER OR ROWBOAT IN FROM 30 SECONDS TO ONE MINUTE

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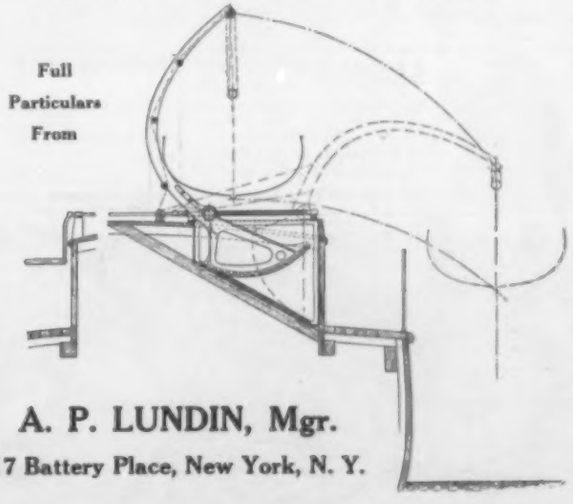

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LAUNCH TOPS, SPRAY HOODS AND BOAT CUSHIONS.
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3 Blade Propeller.

Cap removed showing construction

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2 and 3 Blade

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SO. BOSTON. Lawley's Yard. COUSENS & PRATT, MAKERS OF FINE MARBLEHEAD
Established 1851 Telephone 120
YACHT SAILS
AWNINGS FLAGS

PUTTING THE ENGINE IN COMMISSION

(Continued from Page 220)

bustion of the charge in that cylinder. If the engine has only one cylinder, the effect is not so bad, but with more than one the result is equivalent to timing the ignition unequally in the different cylinders, so that the maximum power cannot be obtained.

A four-cycle engine should have its inlet and exhaust valves (especially the latter) examined for tightness and ground in if necessary. Exhause valves are frequently warped and their faces scored by the hot gases escaping past them. To restore tightness, they must be ground in position by hand. The spring is first removed from the valve stem, an operation most easily accomplished by turning the crank till the valve opens, and then inserting a prop under the end of the spring or the spring-retaining washer (as the case may be), after which the crank is given a half turn and the spring or the "key" under the spring-retaining washer is pulled out and the prop removed. This leaves the valve entirely free to find its seat. The grinding-in process begins with coarse and ends with fine emery, mixed into a paste with a little oil and distributed between the face of the valve and its seat. It must be prevented from reaching the inner cylinder walls. The grinding should be done with quarter twists of a screw driver, and the valve lifted every few twists and advanced a quarter of a turn. A light compression spring under the valve will expedite matters by lifting the valve automatically when pressure on the screwdriver is removed. A correctly ground valve and seat should have smooth, dull (not glossy) surfaces. After grinding, a multi-cylinder engine should have its valves tested, to see that they open and close at the same crank position. This is most easily done by marking the fly-wheel rim for the top and bottom crank positions, and then measuring from these points to those corresponding to the opening and closing of the valves. In doing this, always turn the shaft in the direction it runs, never in the opposite direction. Generally, the valve timing can be adjusted within limits by lengthening or shortening the valve stems. The exhaust valves should close with the cranks a few degrees past the end of the exhaust stroke, and the inlet valves should open at the same moment. Before dismounting, the two-to-one gear teeth should be marked with a prick punch, unless already so marked, so they can be reassembled with the same teeth in mesh.

The main shaft bearings of a four-cycle engine are almost always split horizontally. The upper halves are practically non-wearing, and the shaft is properly lined when the worn bottom halves have been raised to bring the shaft in contact with the top halves. A proper job requires that the lower halves be scraped to a fit, as well as filed at the edges to bring them up. This is an expert machinist's job. If the engine is small, it may be taken out of the boat and turned upside down to give plenty of room to work at the bearings. A large engine must be treated in its own way, according to how the crankcase and bearings are arranged for access. In any case, it is not a job which the average owner can attack single-handed. The crankpins of a four-cycle engine require no special mention, as what has been said above applies to them as well. Occasionally, though not often, the wristpin bushings will need to be replaced, or taken up if adjustment is provided.

In what has been said above regarding the refitting of bearings, no mention has been made of the fact that the main shaft, the crankpin, and the wristpin all tend to wear slightly flat, owing to the pressure being greatest in certain spots. In time this requires that the shaft or

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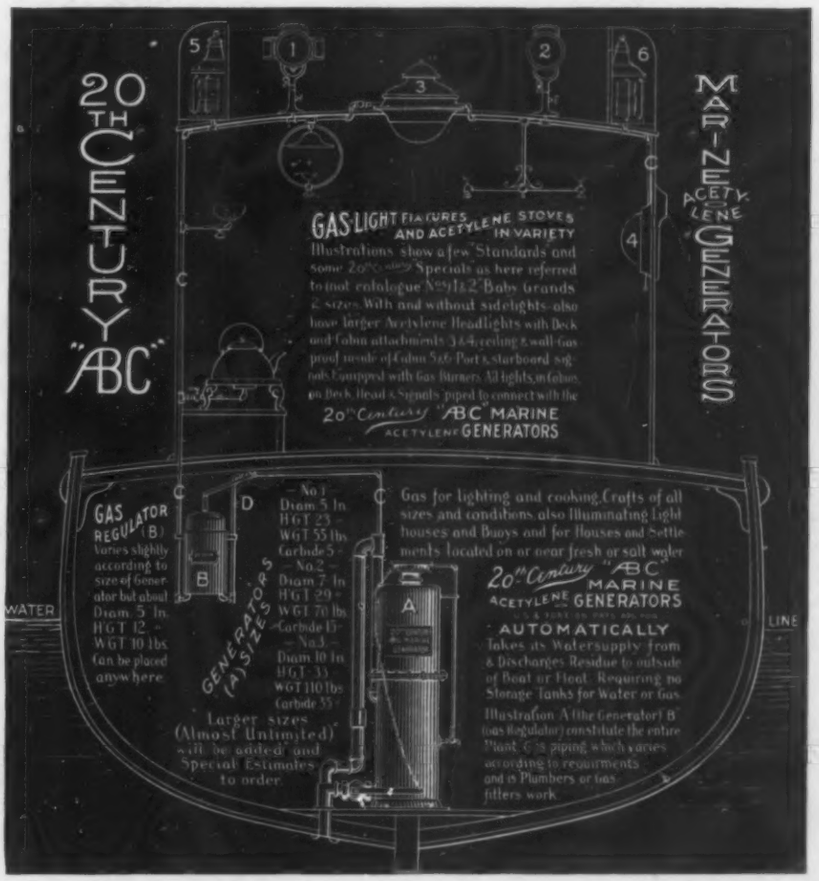
Require No Cleaning

20th Century A B C
Marine Generators
Small, Compact

20th Century A B C
Marine Generators
Simplicity & Efficiency

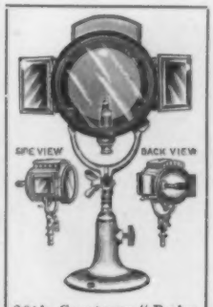

20TH CENTURY "ABC"
MARINE ACETYLENE GENERATORS
GAS LIGHT FIXTURES AND ACETYLENE STOVES IN VARIETY
Illustrations show a few Standards and some 20th Century Specials as here referred to in our catalogue No. 1 & 2 Baby Grands 2 sizes With and without sidelights also have larger Acetylene Headlights with Deck and Cabin attachments 3 & 4 ceiling & wall Gas proof inside of Cabin 5 & 6 Port & starboard sidelights Equipped with Gas Burners All lights in Cabin, on Deck, Head & Signals piped to connect with the 20th Century "ABC" MARINE ACETYLENE GENERATORS
GAS REGULATOR (B)
Varies slightly according to size of Generator but about Diam. 5 In. HGT 12 - WGT 10 lbs Can be placed anywhere
GENERATORS (A) SIZES
— No. 1 Diam. 5 In HGT 23 - WGT 55 lbs Carbide 5 -
— No. 2 - Diam. 7 In HGT 29 - WGT 70 lbs - Carbide 15 -
— No. 3 - Diam. 10 In HGT 33 - WGT 110 lbs Carbide 35 -
Larger sizes (Almost Unlimited) will be added and Special Estimates to order
Gas for lighting and cooking, Crafts of all sizes and conditions, also Illuminating Light houses and Buoys and for Houses and Settlements located on or near fresh or salt water
20th Century "ABC" MARINE ACETYLENE GENERATORS
AUTOMATICALLY
Takes its Watersupply from & Discharges Residue to outside of Boat or Float. Requiring no Storage Tanks for Water or Gas.
Illustration A (the Generator) B (Gas Regulator) constitute the entire Plant. C is piping which varies according to requirments and is Plumbers or Gas fitters work
WATER LINE

20th Century A B C
Marine Generators
Clean Themselves

20th Century A B C
Marine Generators
Economical

20th Century A B C
Marine Generators
Solve The Question

Note the way sizes run in the diagram, an increase of few inches in size of generator makes material difference in the capacity



20th Century "Baby Grand" Combination Head, Port and Starboard Lights.

A REVOLUTIONIZING INVENTION IN ACETYLENE GENERATION BY UTILIZING MARINE SURROUNDINGS

Small in size. Simple to understand. Easy to handle. Requires no cleaning. Great efficiency.

SUPPLYING ABUNDANCE OF GAS FOR ALL ILLUMINATION below and above deck, including if desired SEARCH, HEAD, PORT AND STARBOARD LIGHTS AND FOR COOKING AND HEATING

This system solves the difficult problem—so say experts who have investigated. For full particulars, call at our office, and see in operation—or send for special literature. Orders now being booked and agencies arranged. *OWNERS should have their boats equipped before using this season.* Inexpensive to install and maintain; it gives unqualified gratification.

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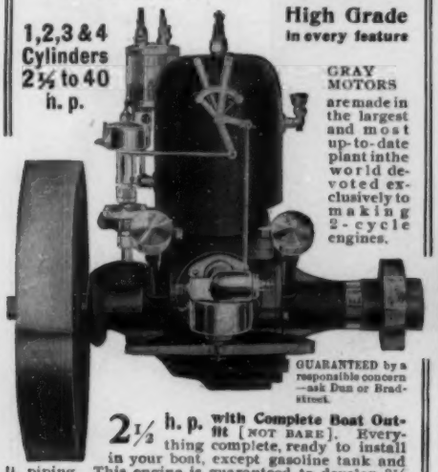
Fastest Cruising Motor Boat
IN THE WORLD

of its length and beam, the yacht "Grayling" shown above, is equipped with three 40 h. p. Gray Motors (120 h. p.) regular stock motors not in the slightest degree different or better than any of the forty Gray Motors turned out of our factory every day, from the little 2½ h. p., $67.50, up. And yet with these same "run-of-factory" motors, the "Grayling" won the Time Prize in the 200-mile race on Lake Erie last August—from Toledo to Detroit River, to Cleveland and back to Toledo. Write for interesting story of this race.

6 h.p. Engine, with complete boat outfit, [NOT BARE] Shaft, Propeller Wheel, Stuffing Box, Muffler, Batteries, Spark Coil, Wire, Switch, etc., all ready to install in your boat **$97.50**

1,2,3 & 4 Cylinders 2½ to 40 h. p.

High Grade in every feature



GRAY MOTORS are made in the largest and most up-to-date plant in the world devoted exclusively to making 2-cycle engines.

GUARANTEED by a responsible concern—ask Dun or Bradstreet.

2½ h. p. with Complete Boat Outfit [NOT BARE]. Everything complete, ready to install in your boat, except gasoline tank and piping. This engine is guaranteed to develop 3½ horse power—is as powerful as most 4 h. p. motors, and is as carefully built,—has as thorough workmanship as one of the Grayling's 40 h. p. engines..... **$67.50**

We built and equipped a fine new factory in the winter of 1906-07; but so enormous was the demand for Gray Motors that we out-grew it, and have just built and moved into another new and larger plant [5 stories]—3 times as large, where we have installed the finest and most modern machinery, the same machinery used in building high-grade automobiles.

Write today for new 1908 Catalog.

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High Grade Heavy Weight Tanks

For Gasolene, Water and Air of any shape or dimensions desired for any pressure. We make only work of merit.

"Light Competition Work Not Wanted."

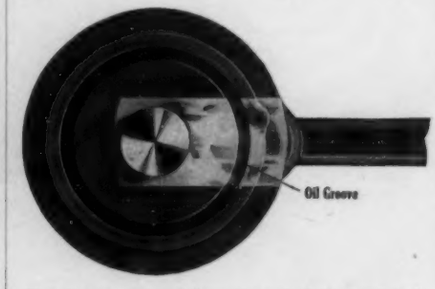
Galvanizing of all kinds of marine work.

L. O. KOVEN & BROTHER
50 Cliff Street : : : New York

pin be trued in a lathe or reground, since no bushing can properly fit a shaft out of round. This will not occur in marine service till a good many miles have been covered; but, at the end of the second or third season, the shaft, etc., should be carefully callipered and if more than .003 or .004 inch out of round, they should be trued and new bushings made for them.

A general exterior cleaning has been taken for granted, as also has the common sense of the owner in greasing the bright parts when laying up the boat. It is well, however, to open and clean thoroughly whatever oiling device is used, and to test its working carefully before trusting it. A mechanical oiler will sometimes fail to work owing to dirt in the check valves. In assembling the oiler after inspection, the utmost care must be taken to put everything back in place, and to make sure that nothing can work loose, as this might result in the oiler quitting business when not suspected.

Reversing gear should be washed out with kerosene and packed with the proper grease, and the friction bands tightened if necessary. Unless a suitable lubricant has been recommended by the maker, it is safe to select the lightest grade of Albany grease that will stay in the gear and not work out so fast as to cause inconvenience. Some reversing gears will not retain this Albany grease, but may be packed with a mineral lubri-



The oil groove viewed from the end of the crankshaft.

cant known as sponge grease, sometimes sold under the name of non-fluid oil or similar titles. It has the property of not melting except at quite high temperatures, consequently a very soft grade may be used without danger of its leaking out. The thrust bearing, especially if a ball bearing, should be carefully examined, and balls or races renewed if there is the slightest indication of chipping or undue wear. It is cheaper to renew a ball bearing before it wears out than after. When new balls are put in, they should be callipered with a micrometer, and the greatest difference in size should not exceed .005 of an inch.

If the intake to the carburetor has a gauze screen, the screen should be cleaned with gasolene. The separator also should be cleaned and the liquid fuel in the carburetor should be drained out before fresh is put in.

If the make-and-break system is used, the igniters should be accurately timed alike by chalking the fly-wheel, and should be examined to see that they are not worn so as to be liable to give trouble during the season. All nuts, etc., subject to vibration should be carefully locked and guarded by cotter pins or some other efficient device. This applies particularly to the nuts on the connecting rods and main bearings and the ignition and valve mechanism. If the jump spark system is used, the timer (or "commutator") should be cleaned; and the contacts and insulation, if worn and burnt, should be put in new condition as nearly as possible by renewal, truing in a lathe, or otherwise according to the type. If the timer is of the roller contact type, it is

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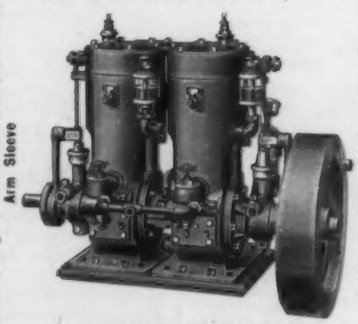
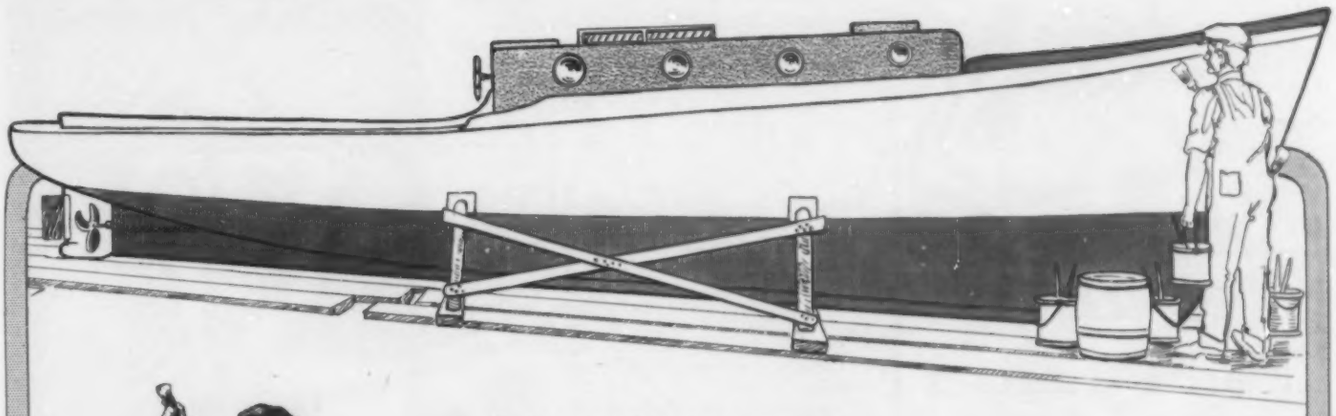
The only Engine with a Direct Oiler to the Crank Arm Sleeve



The Engine has more power than any other Engine made and sold for the same N.P.

The Engine has but three working parts

Bore 2 H.P. Engine, 3¼ inch; stroke 4 inch
Bore 3 H.P. Engine, 4⅛ inch; stroke 4 inch
Bore 5 H.P. Engine, 3⅝ inch; stroke 4 inch
Bore 8 H.P. Engine, 4⅜ inch; stroke 4 inch
Weight, 2 H.P., 140 pounds Weight, 5 H.P., 275 pounds
Weight, 3 H.P., 165 pounds Weight, 8 H.P., 365 pounds
We guarantee them to be EQUAL TO BEST IN THE WORLD



HOW TO PAINT A BOAT

and how to make the paint wear and stay bright after it is applied are two very different problems.

There is considerable art, or at least "knack" in the proper wielding of the brush—and good paint can be made to go wrong by poor application—but no amount of skillful work will make good paint out of badly chosen materials.

PURITY OF MATERIALS OF PRIME IMPORTANCE

Purity of the White Lead used is the first thing of which the yachtsman or boat builder should assure himself. Do not believe that every keg or tin labeled "pure White Lead" contains the real corroded "carbonate" of metallic lead. The latter is the real paint material, but what is politely termed "trade custom" permits you to be deceived into accepting chalk, barytes, white clays and various worthless substances under the name of "White Lead" (often at approximately White Lead prices).

The only protection is a chemical test or the guaranty of a reliable manufacturer. The simplest test is that of the blow pipe described and illustrated on this page. Any one can make it. As for guaranty, one cannot go wrong if National Lead Company brand is used. We guarantee the purity of all White Lead bearing on the keg our Dutch Boy Painter trade-mark.

Having secured White Lead guaranteed by the Dutch Boy Painter, next see to the linseed oil. This necessary paint ingredient is largely adulterated, but good linseed oil can be secured if care is taken. Atlantic, Lewis and Armstrong & McKelvy are among the reliable brands.

MIXING THE PAINT

The proper mixing of the White Lead and linseed oil is important. Do this yourself at the time of painting, not only because the compositions of prepared paints are uncertain, but also because pigment and oil should not be allowed to stand long together before application. We recommend the following formula for average conditions:

PRIMING COAT

100 lbs. pure White Lead
6 to 7 gallons pure raw linseed oil
1 gallon pure turpentine
1 1-2 pints pure turpentine japan

SECOND COAT

100 lbs. White Lead
1 1-2 gallons raw linseed oil
1 1-2 gallons turpentine
1 1-2 pints japan drier

THIRD COAT

100 pounds White Lead
1-2 gallon raw linseed oil
2 gallons turpentine
1 1-2 pints japan drier

By painting extremely "flat" the film exposed to the water wears much better than a film rich in oil.

In mixing paint put in the drier and tinting colors while the paint is still in the form of thin paste, add the necessary oil next and finally the turpentine.

HOW TO MAKE TINTS

Any desired tint can be obtained with White Lead except the very dark ones. A very little lamp black or drop black to the hundred pounds of White Lead makes the various grays. A little Prussian blue in White Lead makes the lighter blues; and so on for all the tints of the rainbow.

THE BLOW PIPE TEST

To test for adulterations in White Lead place a pea-sized bit of the material in a hollow scraped in a piece of charcoal, on a piece of wood. Direct upon it a flame by means of a blow-pipe. If the White Lead is pure it will reduce under the flame to globules of the metallic lead—from which it was originally made. If any residue remains unreduced, it shows the presence of adulterations. If *no* lead beads can be produced, it is certain that the supposed White Lead is wholly fraudulent.

A blow-pipe for making this test, will be sent free upon request, to any yachtsman or person interested in the painting of boats or buildings. Full directions for making the experiment together with other information about paint and painting will be mailed at the same time. Ask for Test Equipment.

ADDRESS
NATIONAL LEAD COMPANY, NEW YORK
Or any of our Branch Offices named at the foot of the page

PAINTING METAL PARTS

Iron and steel hulls, masts or other metallic parts of a vessel should be painted first with National Lead Company's Red Lead, mixed twenty-five to thirty-three pounds of Red Lead per gallon of pure linseed oil. The linseed oil should be one-third boiled oil and two-thirds raw oil. Varying quantities of Red Lead are given because conditions are not always the same. The more pigment to the gallon of oil, the better, up to thirty-three pounds.

After two coats of Red Lead, finish with White Lead tinted to suit, if on ornamental parts, or with anti-fouling paint below the water-line if desired.

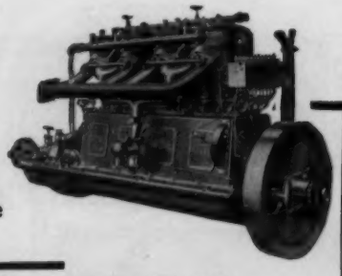
We shall be glad to send to any address upon request, general painting literature or reply to any specific inquiry on painting which you may desire to ask.

ADDRESS MARINE PAINT DEPARTMENT

NATIONAL LEAD COMPANY

New York Boston Buffalo Cleveland Cincinnati Chicago St. Louis Philadelphia (John T. Lewis & Bros. Co.) Pittsburgh (National Lead & Oil Co.)

Write for Our New Free Engine Book



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of finest selected cedar. Durable, light weight, easy rowing models, will carry an immense load. Finished in ash, oak or cherry.

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35 years of successful designing and construction are back of our products.

Special boats and motor boat hulls built to order.

Indian Girl Canoes at sporting goods dealers in all cities.

CATALOG ON REQUEST.

J. H. RUSHTON, Inc.,
Water Street, : : Canton, N. Y.

better to oil it with a few drops of oil for every run than to pack it with even the thinnest grease. A snap contact timer, however, may be packed with thin grease and left several weeks or months without attention.

The wiring, both primary and secondary, should be carefully overhauled for possible breaks due to vibration (this may occur inside the insulation) and for defective secondary insulation, permitting escape of spark current to adjacent metal. It is perfectly possible to arrange the wiring so that it will last nearly as long as the boat, and the moderate amount of time and expense required for a durable job will be well spent. A make-and-break system is best wired up with No. 16 lamp cord, untwisted and drawn through rubber tubing. The cord should be slightly slack at all points, and should be supported at the engine and at the battery and switch so that no considerable length of it will be left swinging. At points where vibration occurs, the wires should be twisted into a coil long enough for *all* the vibration to be absorbed by springing, not by bending of the wire. The terminals of the wire at the battery and the engine should be soldered to copper "battery connectors" of the sort used in automobiles, and the rubber tubing above mentioned should be drawn over the cord and the end of the battery connector to stiffen the former and prevent local bending at that point. The primary wiring of a jump spark system may be arranged in the same way, special precaution being taken with connections with the timer to avoid local bending due to the combined action of vibration and the changes in the timer's position. The secondary cables (to the spark plugs) should be of the best quality, made for that special purpose, and should be supported with equal care to avoid bending at their ends. It is a good plan to draw these cables also through rubber tubing. It is also important with some types of spark coil that the secondary cables be at least an inch apart and as far from the engine to avoid the effects of inductive action.

If a vibrator coil is used, the platinum points of the tremblers should be filed smooth and true with a jeweler's file, and adjusted with a low-reading ammeter in circuit to use not more than one ampere, when the trembler is working continuously and the motor standing still. A good coil will use less than half that current. If the contact points are nearly gone, it will be well to send the tremblers to the makers of the coil for new points.

BOW-FACING OARS

EVERYONE who rows realizes the danger and inconvenience of having his back toward the front of the boat, making it necessary to turn the head continually to see where he is going. So the advantage of a bow-facing oar device is obvious. By facing the bow while rowing, one's mind is relieved of the strain of the uncertainty of his location, and the scenery can be enjoyed to its best advantage.

His device consists simply of two sprockets on the gunwale of each side of the boat, each sprocket revolving around a stud, which is attached to a rod, about a foot long, with a journal at each end, and rests in sockets adjusted to the gunwale. An ordinary oar is cut into two pieces, each part being attached to a crank projecting from the sprocket. He uses an ordinary bicycle chain, which crosses between the sprockets; consequently, when pulling the handle portion of the oar, the blade section travels in the same direction and the boat is propelled forward. The motion of rowing is exactly the same as with the ordinary straight oar.

A patent has been applied for by W. F. De Voy.

"AUTO" CANOE

"The Climax of Canoe Goodness"

The Carleton "Auto" Canoe combines the grace of a paddling canoe with the speed and comfort of a launch—is strong, steady, handsome, nicely fitted and finished. Power is always ready and is quickly mastered by anyone. Air chambers are added which increase the buoyancy without detracting from its graceful lines. An ideal boat for pleasure, fishing trips and as a yacht tender—described in handsome book, "Paddle or Power Canoeing," sent free. Write today.

Carleton Canoe Co.,
17 Main Street,
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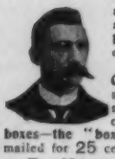
After Shaving use
MENNEN'S
BORATED TALCUM
TOILET POWDER



and insist that your barber use it also. **It is antiseptic,** and will **prevent** any of the skin diseases often contracted.

A positive relief for **Chapped Hands, Chafing,** and all afflictions of the skin. Removes all odor of perspiration. **Get Mennen's** — the original. **Put up in non-refillable boxes—the "box that lox."** Sold everywhere or mailed for 25 cents. Sample free.

Try Mennen's Violet (Borated) *Talcum.*

GERHARD MENNEN CO.
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Little Rhody II. and Dorothy Q, both equipped with Wilson & Silsby's Sails.—As a consequence it is a "toss-up" which wins.

Notable Achievements in Sail Making !

Everyone knows of the remarkable record of "Little Rhody II.," pictured above, last season in winning ten first places, seven seconds and ten thirds out of thirty-three starts, and of her finishing second in the championship of the Boston and Corinthian Yacht Clubs and of the Massachusetts Yacht Racing Association, besides winning the Exposition Cup at the Jamestown races last September. And that of "Dorothy Q," which shared with "Eleanor" the honors of the racing of the "Q" Class in New England last summer. Both these yachts **WERE EQUIPPED WITH WILSON & SILSBY SAILS. The sails of "Eleanor," the crack Q boat of the country, WERE ALSO MADE BY US.**

Of a different sort of craft "Dervish," winner of the ocean race from Gravesend Bay to Bermuda, **spread canvas which came from our lofts.** Her sails were the object of much comment before starting because of **perfection of fit; and she went through without stretching or any injury to the sails.**

You can also have a race winner this season IF YOU WILL COME TO US, for **WILSON & SILSBY SAILS** are

Sails that Fit Like a Glove

Good sails are as essential to the cruiser as to the racer. Like racing canvas, the sails of a cruising craft should possess qualities adapted for the work they have to do. Weight, texture, resistance to mildew, and strength are all important elements. **WILSON & SILSBY'S CRUISING SAILS ARE THE RESULT OF YEARS OF STUDY.**

Among a large number of successful yachts we have equipped are the following:

Vergemere	**Weetamoe**	**Dervish**	**Intrepid**
Alcyone	**Constance**	**Spirit**	**Elmira II.**
Effort II.	**Resolute**	**Dorothy Q**	**Taormina**
Ariadne	**Katrina**	**Corona**	**Eleanor**

THE FABRIC USED is in no small degree responsible for the success of our sails. It is made under our own formula, of the best combed peeler American cotton, and is the result of a lifetime's study of canvas. We also use Imported Egyptian Cotton if desired.

Wilson & Silsby

Our Cable Address is "WILSAILS," BOSTON, W. U. C. C.

Rowe's Wharf, Boston, Mass.

LOOK! EXPLOSION GASOLENE LAUNCH

WRECKED GASOLENE LAUNCH.

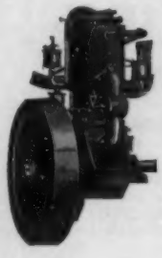
Occupants Missing—Indications Point to an Explosion.

Block Island, R. I., Aug. 1.—A gasolene launch with her engine broken as if by an explosion and otherwise badly wrecked, was picked up off the entrance of West Harbor late today by Captain Sands, of the life saving station. The launch had no occupant and the only trace of her identity was found in the name Aisla, on one of her propellor blades. Captain Sands said tonight that the appearance of the craft indicated that there had been an explosion.

Who's **Next?**

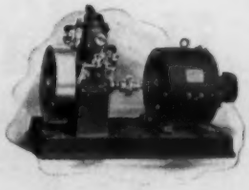
NOT YOU by using

INTERNATIONAL KEROSENE OIL ENGINE
MARINE



No Danger Simple Reliable
No Valves Economical
Maximum Power
FULLY GUARANTEED
Equipped with Electric Ignition if desired

Charge your Storage Batteries. LIGHT your Home and your Boat.



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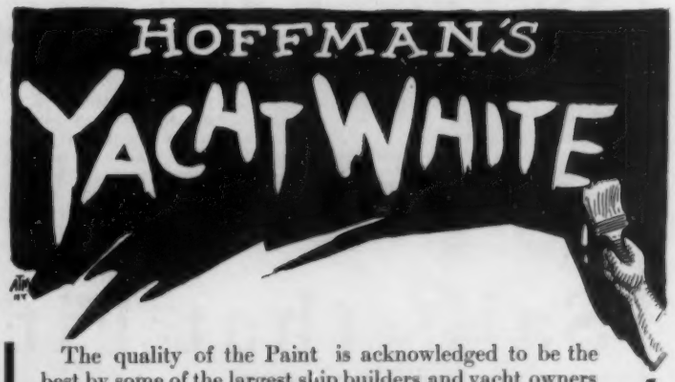

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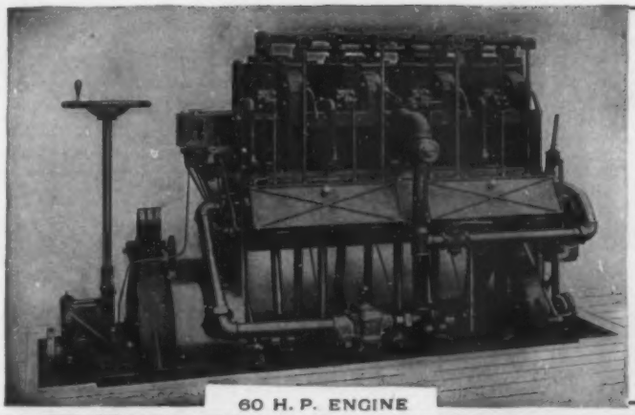

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It works easy, dries quickly and

It won't turn white

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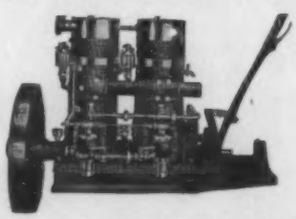
THIS is the engine that won the long distance race from Chicago to Mackinac on July 20th, 1907, proving the endurance and reliability of our machine. We quote the following from a letter from the owner of "SWASTIKA," winner of the race:



"We are pleased to inform you that we won the Mackinac long distance race on July 20th, with our 42 x 10 motor boat "SWASTIKA" with your three-cylinder 16 H. P.

FAY & BOWEN ENGINE

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We also build a successful kerosene engine Write for catalogue of engines and boats

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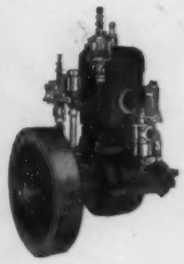

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We offer more real motor value, larger cylinders, more power, service and satisfaction than any other manufacturer. Our catalog claims it; our customers confirm it; our sales prove it.
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We sell on the bore and stroke of our cylinders and their capacity in cubic inches. To realize the importance of this matter, send for our catalog.
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Gives absolute control of the motor-boat at all times.
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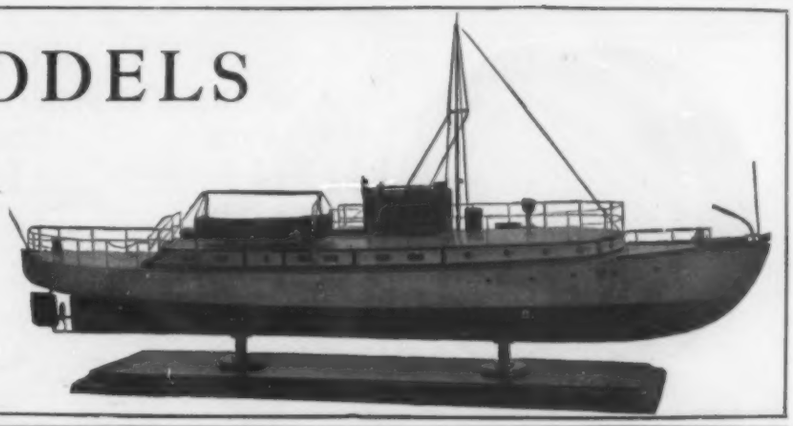

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The *only frames* in which *every part is completely finished, set up, tested* and *tried* before being knocked down for shipment.

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They are built of smooth, pressed steel plates with air-chambers in each end like a life-boat, and don't crack—leak—swell—dry out—wear out or sink. They are strong—safe—seaworthy—indestructible and much lighter, more buoyant and faster than wooden boats. Every boat is guaranteed. **The ideal boats for sportsmen, families, boat liveries, resorts, parks, etc.**

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A dial in engine room, cabin or cockpit, shows at all times the exact speed.

Can be used on any sized craft, whether driven by sail, steam or power.

Send for catalogue, illustrating and describing the Speed Indicator, also Recording Ships' Logs and Range Finders

NICHOLSON SHIP LOG CO.
Cleveland, Ohio

EASTERN AGENTS, BARRETT & LAWRENCE
662 Bullitt Building, Philadelphia, Pa.

PACIFIC COAST AGENT, C. P. NICHOLSON
82 Market Street, San Francisco, Cal.

IGNITION SUPPLIES

We manufacture and carry in stock a full line of Ignition Supplies, and *the prices are right.*

Manhattan Ignition Switch

Removal of lever prevents careless or intentional use of the apparatus during the owner's absence. Arranged to throw in either set of batteries or battery and magnets.

The back is provided with a soft rubber gasket, making it absolutely water-tight.

Mesco Battery Connector

Has spring clip, which grips the post firmly and cannot be loosened by engine vibration.

The heavy spring copper terminals insure a strong connection, even though the nut be lost off binding post.

A postal brings our Catalog Y-22, entitled "SOMETHING ELECTRICAL FOR EVERYBODY."

Manhattan Electrical Supply Co.

17 Park Place, NEW YORK

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Getting There and Back

means more than a good motor. It means good ignition back of the motor. When miles out from shore a helpless engine puts things in a bad way. You avoid this if you have Edison Primary Batteries. They provide sufficient current at all times, maintain their full voltage until completely exhausted, and unfailingly deliver the quick, hot spark necessary for gas engine work.

"Battery Sparks" is a booklet on the subject.

Write for it.

Edison Manufacturing Company

40 Lakeside Avenue, Orange, N. J.

Little Giant

GASOLINE MOTORS

Reliable--Reversible--Two Cycle

3 Port, Eliminating the noisy and troublesome Check Valve of the 2 Port Type

Light Simple and easy to operate. Only three moving parts. Main bearings Babbitted. Material and workmanship of the highest grade and guaranteed. JUMP SPARK IGNITION.

POSITIVE FORCE FEED LUBRICATING SYSTEM

Water Sprayed Exhaust Silencer or Muffler.

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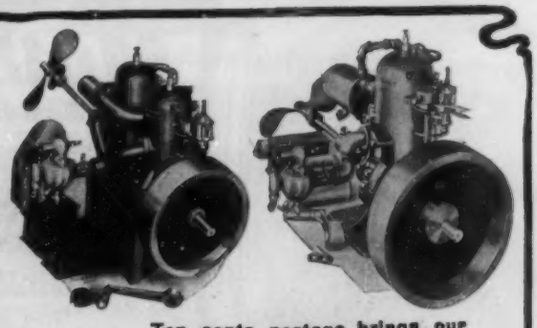


Ten cents postage brings our Treatise on the Gasoline Motor.

Cruising Comfort

THERE are any number of craft built each season which possess speed, or comfort, or seaworthiness, or convenience in accommodation plans.

But few of them possess ALL four of these points to any marked degree.

It's not such a difficult task for a designer or builder, or even a real bright amateur to turn out a speedy craft, a comfortable craft, or one which will stand the hard knocks of rough weather cruising without too much discomfort to passengers or crew.

DECK SCENE ON JONETTA—A 70-FOOT POWER YACHT BUILT BY THE NILSON YACHT BUILDING CO. THE SHIPSHAPE ARRANGEMENT AND REAL COMFORT OF THE SURROUNDINGS TELL THE STORY.

When, however, it comes to combining these points in one craft, and so designing and arranging her that the speed is obtained economically, the comfort does not sacrifice speed or seaworthiness; it requires something more than a natural ability to draw plans and set up the frames.

It requires years of experience in the drafting room, in the yard, and in the actual handling of craft.

It requires the combined knowledge of the designer, the builder and the sailor, and in but few cases is the experience combined in one and the same person.

This is one of the points wherein our company is particularly strong.

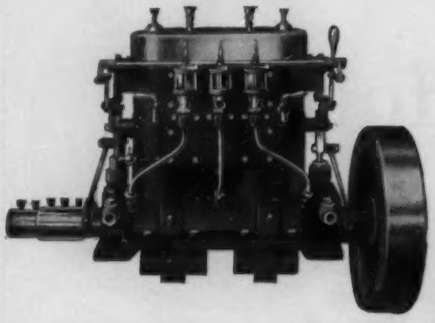
Our experience covers the entire field of marine design, construction and handling, and the craft turned out by us are thoroughly practical from a seaman's point of view.

We would like to correspond with you in regard to your new boat, and will go into details if you will tell us what your requirements are.

The NILSON YACHT BLDG. CO., Baltimore, Md.

BUILDING AND REPAIRS TO HULL, MACHINERY AND RIGGING. MARINE RAILWAYS AND WINTER STORAGE.

Visiting Yachts Steer W. from Fort McHenry for 1 Mile. SUPPLIES OF ALL KINDS. No Catalogues.



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MAKE AND BREAK IGNITION

Direct from Factory to User at FACTORY PRICES

We also manufacture the well-known **TOQUET MOTORS** which can now be purchased direct from us.

HIGHEST CLASS OF WORKMANSHIP

Have stood the test of Long Service

Prompt Deliveries

WRITE FOR CATALOGUE WITH PRICE LIST. IT WILL INTEREST YOU.

THE STANLEY CO., 79 Milk St., Boston, Mass.

Start Right This Year

IF a disappointed "*Old Hand*," because of previous unsatisfactory motor experience, learn the meaning of "Engine Satisfaction" by putting in a **"BUFFALO."** If a "*New Beginner*," guard against trouble and ensure a pleasurable start and continuation in motor boating by following same plan.

Engines for Any Size Boat, for Any Kind of Work, for Use Anywhere—the Dependable Kind which Have Created the "Buffalo Reputation."

2 to 100 H.P., 2 to 6 Cylinder, in Regular Type; 6 to 54 H.P., 1 to 6 Cylinder, in Slow Speed Heavy Duty Type. All "BUFFALO QUALITY" throughout.

Our 48-page *Handsomely Illustrated* Catalogue sent free to interested parties on request.

BUFFALO GASOLENE MOTOR CO.

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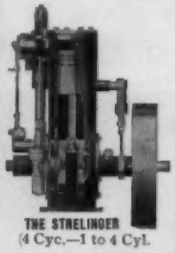

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A STRELINGER

in your Launch is like Gold in your Pocket:

MIGHTY SATISFACTORY

THE STRELINGER ALWAYS GOES.

Safe. Simple. Durable. Reliable. Powerful.

"GOOD AS EVER, after 10 years of service." That's the way we build them. **GOOD ALWAYS.** TROUBLE LEAVES when the Strelinger comes aboard.

We carry in stock 2 and 4-Cycle Marine and Stationary Engines, 1½ to 50 H.P., $25 to $2,500. Send for Catalogue. Special bargains on a few sample motors.

THE STRELINGER MARINE ENGINE CO.

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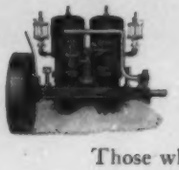
46 E. Congress Street, - - - Detroit, Mich.

In the Making of 1908

CUSHMAN MOTORS



We will continue with our one aim to build the **BEST** small marine engine, not the cheapest

Those who want reliable power for their family or racing boat should write us.

CUSHMAN MOTOR COMPANY

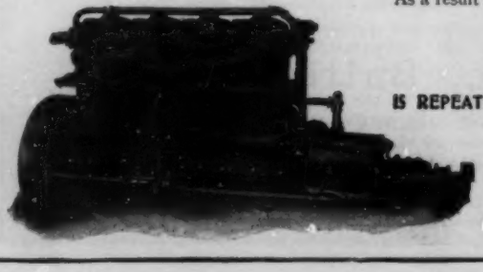
2024 N. STREET - - LINCOLN, NEBR.

This is Important to You

Perhaps you know that the U. S. Government selected the Jager engine for use in the navy, the Revenue Cutter Service and the Department of Commerce and Labor for special service in the Arctic, the Temperate and Torrid Zones.

But here is the most important point to you: Very careful records of the performance of the Jager Engine have been kept in each of these departments for the guidance of various other departments in the purchase of gasoline engines

As a result of this painstaking care, the



Jager Marine Engine

IS REPEATEDLY SELECTED, WHILE OTHER MAKES, SUBJECTED TO THE SAME TESTS ARE DISCARDED

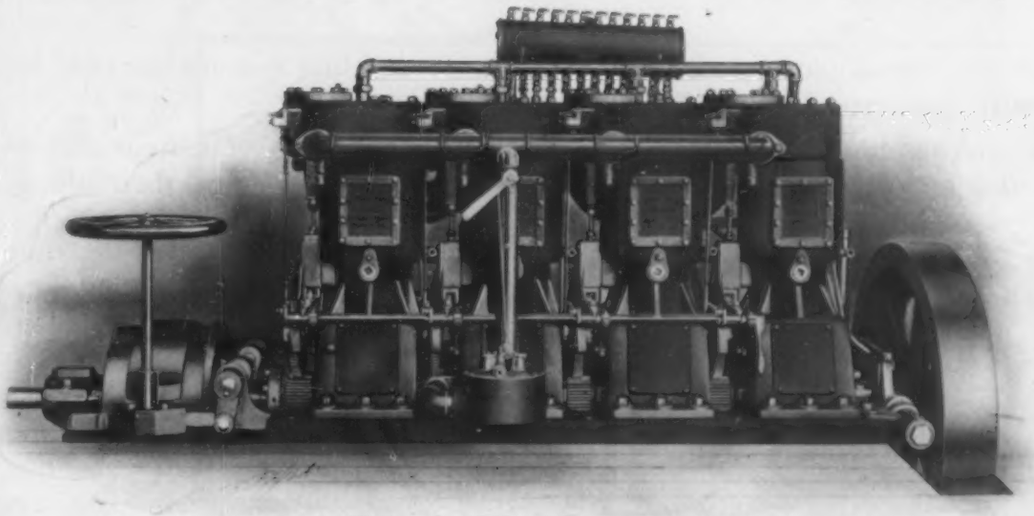
This means something to YOU if you need boat power. You can get a Jager Engine of any size from 3 to 60 H.P. and have the comfortable feeling of knowing you have the best there is to be had.

WE MAKE 1, 2, 3, 4 AND 6 CYLINDER ENGINES

Write for illustrated catalogue containing information you ought to have. Also send for special pamphlet on our MARINE TYPE DIRECT CONNECTED UNITS for the electric lighting of yachts.

Charles J. Jager Company 281-283 FRANKLIN STREET, BOSTON, MASS. or, 33 CANAL STREET, PROVIDENCE, R. I.

GLOBE MARINE ENGINES



BUILT IN
17 SIZES
FROM
3 to 100 H. P.
AND
1 to 4 CYL.

4 CYCLE ONLY

IN USE
EVERYWHERE
FROM
1891 to 1908

CATALOGUE
On REQUEST

ALL SIZES IN STOCK

4-CYLINDER 40 H. P. BORE 7½", STROKE 9". R. P. M. 325.

PENNSYLVANIA IRON WORKS CO., Eddystone, Pa.

OUR ADD

IS AN ADDITION

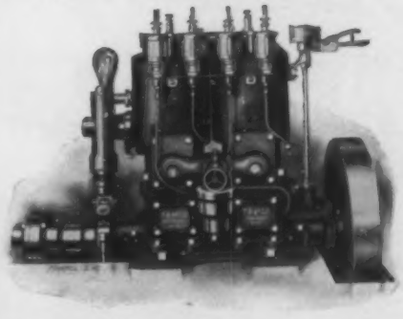
No. 1 Self lubricating connecting rods
No. 2 Neat design
No. 3 Simplicity
No. 4 Starts readily in any climate

PRICES

1¼ H. P. Complete - -	$ 65
3 H. P. Double Cylinder	125
5 H. P. Single "	125
10 H. P. Double Cylinder	225
16 H. P. " "	300

TOTAL FACTS—The above, with a bona-fide guarantee of satisfaction has made our Motors the envy of all manufacturers. WE MAKE GOOD from start to finish. WHY? Because a miss-fire is as rare as a complaint. After thorough inspection of the most minute detail, an engine turned out by us is not a speculation—but a certainty

AMERICAN MOTOR CO. EAU CLAIRE, WIS.



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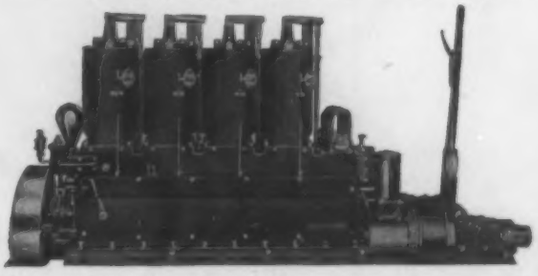
Reversible Engines

ALWAYS LEAD

Termaat & Monahan Co., OSHKOSH, WIS.

RALACO

THE SILENT SIMPLIFIED ENGINE



Has less moving parts than any four-cycle engine with mechanically operated valves.

Has no oil-cups, oil pumps or sight feeds requiring attention.

Has no piping attached to the cylinders.

We guarantee a fuel consumption of not over one-tenth of a gallon per horsepower hour.

Does this interest you? Then let us tell you more.

We build Two-cycle Engines just as good as our Four-cycle.

THE S. M. JONES COMPANY

Successors to The Rathbun-Lacy Company

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APR 4 1908

Lighting Talk No. 4

DON'T make the mistake of figuring out that electric lighting systems are only for the big craft.

It's the single handed cruising man with the small launch who gets the real comfort and satisfaction out of a lighting plant that does away with oil lamps, their filling, care and odor.

The big fellow saves the time and trouble of his crew—the small craft owner is directly interested in saving this same time and trouble for *himself*.

We make electric generating plants so small and compact that they don't obtrude themselves unduly—even in a 25-footer, but, like the Texan's gun, the light is there when you need it.

We can give you a layout consisting of generator, storage battery and all the facilities for lighting the interior as well as furnishing current to the side and searchlights, and for sparking the engine.

Our generators are acknowledged to be the most compact for their capacity and our storage batteries are the simplest, most accessible, and the most economical in operation.

Our switchboards—the heart of the lighting system—are correctly proportioned to the size of the plants which they govern and are reliable, effective and ornamental in appearance.

We can furnish you an equipment which will double the pleasure of your season's cruising.

Write and tell us the dimensions of your craft, and how many lights are desired, and we will give you the details regarding weight and cost of the required plant.

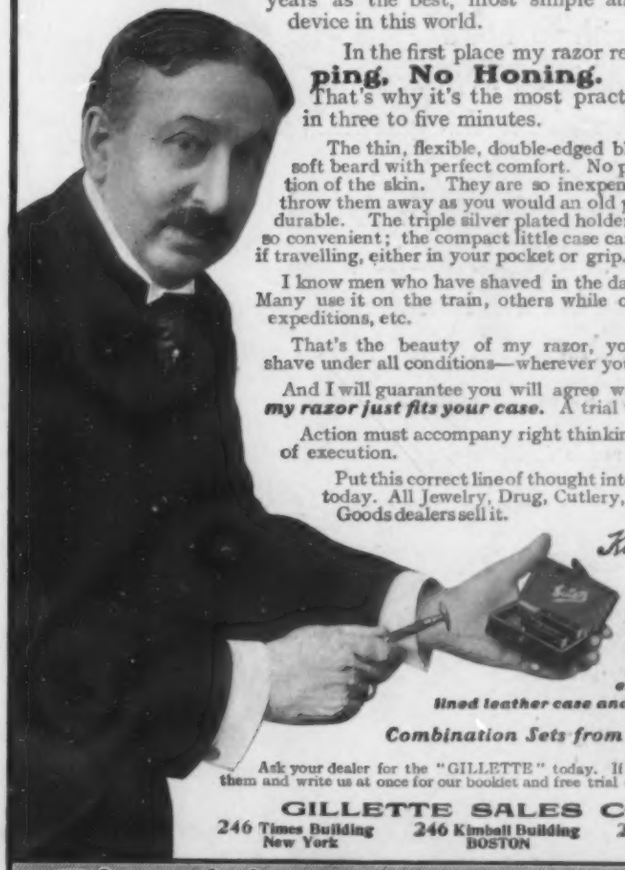
The Richardson Engineering Co.

Hartford, Conn.

If my Razor wasn't good enough for me to use I wouldn't ask you to try it!

You certainly cannot doubt the sound logic and wisdom of the many arguments I have advanced in favor of my razor.

You will admit that unless the "GILLETTE" possessed many points of superiority it never would have been accepted by two million men in the past three years as the best, most simple and satisfactory shaving device in this world.



In the first place my razor requires **No Stropping, No Honing.** It is always ready. That's why it's the most practical. You can shave in three to five minutes.

The thin, flexible, double-edged blades remove a harsh or soft beard with perfect comfort. No pulling, cutting or irritation of the skin. They are so inexpensive that when dull you throw them away as you would an old pen. No other razor so durable. The triple silver plated holder lasts a lifetime. None so convenient; the compact little case can be with you always—if travelling, either in your pocket or grip.

I know men who have shaved in the dark with the "Gillette." Many use it on the train, others while on hunting trips, fishing expeditions, etc.

That's the beauty of my razor, you can obtain a perfect shave under all conditions—wherever you are.

And I will guarantee you will agree with me right now—***that my razor just fits your case.*** A trial will prove it to you.

Action must accompany right thinking or you have no power of execution.

Put this correct line of thought into action. Get a "Gillette" today. All Jewelry, Drug, Cutlery, Hardware and Sporting Goods dealers sell it.

King C. Gillette

The Gillette Safety Razor Set consists of a triple silver plated holder, 12 double-edged flexible blades—24 keen edges, packed in a velvet lined leather case and the price is $5.00.

Combination Sets from $6.50 to $50.00

Ask your dealer for the "GILLETTE" today. If substitutes are offered, refuse them and write us at once for our booklet and free trial offer.

GILLETTE SALES COMPANY

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Gillette Safety Razor

NO STROPPING NO HONING

Victor

Don't start on your cruise until you have the world's best entertainers on board

They're ready to go with you. Take the *Victor* along and you have them all. You and your friends will want them to sing and play often, for nothing sounds so beautiful as *Victor* music on the water.

The most famous grand opera singers, the leading vaudeville stars, the most celebrated bands and instrumentalists of both continents are all at your command on the *Victor*—and only on the *Victor*. You can take them with you wherever you go—on sea or land—and hear them at your pleasure.

$10 to $100. At all live music dealers and talking-machine merchants.

Write for catalogues of the *Victor* and *Victor Records*.

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To get best results, use only Victor Needles on Victor Records.